Transport Canada Transports Canada
Marine Safety Sécurité maritime

TP 1332E

Construction Standards For Small Vessels

June 1999

Canada

100-07023/

Transport Canada Transports Canada
Marine Safety Sécurité maritime

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Web Site: http://www.tc.gc.ca/shipsafety/toc_ehtm

Fisheries and Oceans Canada Pêches et Océans Canada
Canadian Coast Guard Garde cotière canadienne

Office of Boating Safety
Centennial Tower
200 Kent Street, 5th Floor
Ottawa, Ontario K1A 0E6
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Tel.: (613) 991-3127 or (613) 991-3128
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Web Site: http://www.ccg-gcc.gc.ca

Ce document est aussi disponible en français.

Construction Standards for Small Vessels

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Construction Standards for Small Vessels

Section 1 : Background

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Table 1-1: Application of Various Sections

Section	Description	Pleasure Craft	Commercial Vessels
1	**Background**		
	Introduction	x	x
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	Maximum Power	x	x
	Minimum Flotation	x	x
	Level Flotation	x	x
	Multihull Boats		
	Calculation Criteria	x	x
	Maximum Load	x	x
	Maximum Number of Adult Persons	x	x
	Maximum Power	x	x
	Inflatable and Rigid Inflatable Boats		
	Maximum Load	x	x
	Maximum Number of Adult Persons	x	x
	Maximum Power	x	x
6	**Ventilation Systems**	x	x
7	**Fuel Systems**	x	x
8	**Electrical Systems**	x	x
9	**Machinery Systems**		x
10	**Fire Protection Systems**		x
Appendix		x	

Section 1: Background

Introduction

1. This Standard has been developed for small vessels including those which operate as pleasure craft or commercial vessels, and supersedes the *Construction Standards for Small Vessels TP1332 - ~~1972~~.* 1978.

2. The responsibility for the application of this Standard is jointly shared by Canadian Coast Guard, Office of Boating Safety for Recreational Vessels, and Transport Canada, Marine Safety for Commercial Vessels. This Standard does not overrule existing applicable regulations.

3. This Standard derives its authority from the *Small Vessel Regulations from the Canada Shipping Act*, as amended from time to time either in whole, or by individual sections, with additions and/or alterations authorized where appropriate by Canadian Coast Guard or Marine Safety through the Board of Steamship Inspection (henceforth 'the Board'), Marine Safety Directorate – Transport Canada.

4. The Board emphasizes to the designer, builder, owner, or operator that it is their responsibility to carefully consider the intended operation of the vessels when determining the construction, freeboard and stability of their vessel, and when selecting materials and equipment so as to ensure that such items are adequate for the working and environmental conditions that they may encounter.

5. Criteria are derived from good boat building practices, and awareness of the need for the safety of boaters and the protection of the marine environment. In this regard, it is the intention of this Standard to meet the practical needs of the industry.

6. The long-term goal is standard harmonisation with the standards of both ABYC (American Boat and Yacht Council), whose assistance in drafting referenced sections is acknowledged, and ISO (International Organisation for Standardisation) as appropriate. Where standards from other organisations are referenced, they may be obtained from the addresses listed.

7. Each section is to be considered as a separate part. The sections of the document are valid from their date of publication, are subject to amendments from time to time, and are produced both in English and French.

Application

8. This Standard applies to all new uninspected vessels that do not exceed 15 tons gross tonnage that are operated either on a commercial or recreational basis, excluding commercial fishing vessels. Existing vessels shall comply with this standard as far as reasonable and practicable.

9. The application of the various sections of this Standard with respect to commercial vessels versus pleasure craft are identified at the beginning of each section and in Table 1-1.

10. Where there is a need for clarification as to whether or not a particular section, or vessel operation, falls within the intent of this standard, a ruling on the matter will be clarified by the Board and any such ruling may be appealed to the Board.

Pollution Discharge Advisory

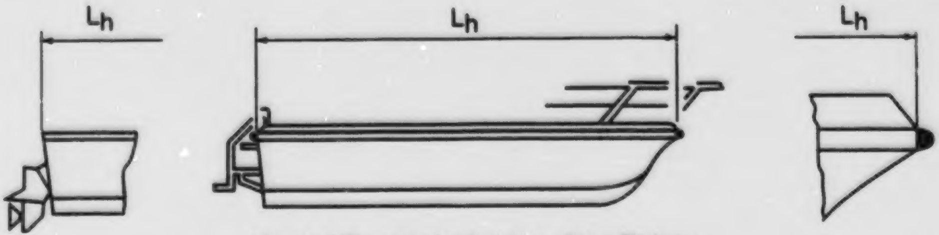
Manufacturers and importers of small vessels are advised to check whether restrictions apply in the area their vessels are going to be used, and whether it is necessary (if they are fitted with marine toilets) to install holding tanks and associated equipment.

Definitions

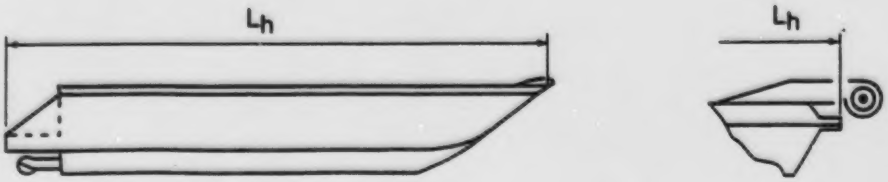
"Board"	means the Board of Steamship Inspection appointed pursuant to Section 304 of the *Canada Shipping Act*.
"Closed Vessel"	means a vessel having a closed-in hull formed by a full-length watertight weather deck, or any combination of weather deck, superstructure or deckhouse such that intact buoyancy and positive stability will be maintained in adverse weather conditions.
"Commercial Vessel"	means a boat, vessel or any other description of craft, other than a pleasure craft or commercial fishing vessel.
"Department"	means Canadian Coast Guard within the Department of Fisheries and Oceans.
"Designated occupant position"	means a specific location for a person within the boat, being either a seat or a location for standing with adequate hand holds.
"Engine Power"	means the engine shaft power, in kilowatts (and horse power), calculated in accordance with ISO 8665.

"Length"	means the distance measured from the forward end of the foremost outside surface of the hull shell to the aft end of the aftmost outside surface of the hull shell.
"Mandatory Standards"	are those standards that must be implemented on all boats subject to the *Small Vessel Regulations*.
"Maximum load"	means the cumulative weight of occupants and loose gear.
"Open Vessel"	means a vessel that could be swamped or downflooded in adverse weather conditions, and includes vessels such as those having: (a) an open hull with little or no means of protection to prevent water that is shipped over the gunwales from flooding the hull; and (b) an open hull that is fitted with partial heavy weather protection such as a forward deck.
"Pleasure Craft"	means a vessel used by an individual for pleasure and not for a commercial purpose.
"Power Ratings"	are maximum engine power ratings in kilowatts (and horse power).
"Recommended"	means calculated according to the formulae set out in this Construction Standard as applied to maximum gross load, number of adult persons, or safe engine power limits.
"Standard"	means the Construction Standards for Small Vessels. TP1332 - 1999.
"Uninspected vessels"	means pleasure craft, and commercial vessels not in excess of 15 tons gross tonnage that do not carry more than 12 passengers, which are exempt from annual inspection.
"Watertight"	means capable of preventing the passage of water in either direction.
"Weathertight"	means capable of preventing the admission of a significant quantity of water into the vessel.

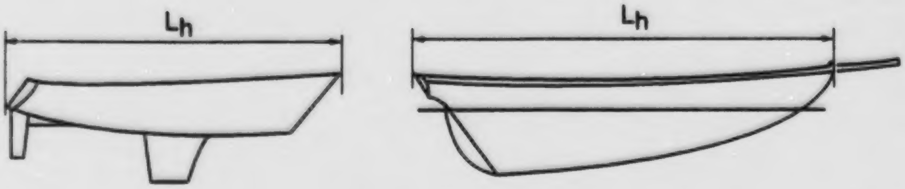
Illustrations of Length (Lh) on Various Small Vessels



Monohull Powerboat with Add-on Swim Platform

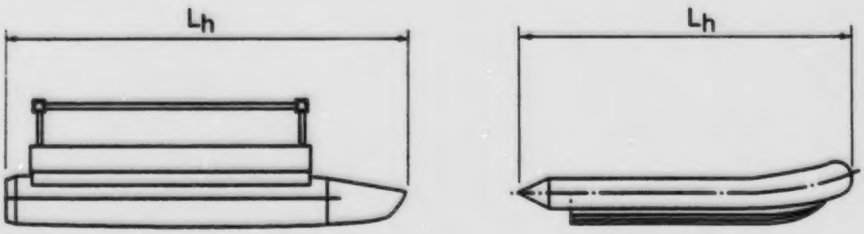


Monohull Powerboat with Built-in Swim Platform



Fin Keel Sailboat

Full Keel Sailboat



Multihull/Pontoon

Inflatable/Rigid Inflatable

Diagram 1-1

Referenced Organisations

ABYC

American Boat and Yacht Council,
3069 Solomon's Island Road,
Edgewater, MD 21037, USA
Telephone: 410-956-1050

ASTM

American Society for Testing and Materials,
1916 Race Street,
Philadelphia, PA 19103, USA
Telephone: 215-299-5400

Canadian Electrical Code – Canadian Standards Association
178 Rexdale Boulevard,
Rexdale, Toronto, Ontario M9W 1R3, Canada
Telephone: 416-747-4044

CFR

Code of Federal Regulations (and other U.S. Government publications) from:
The Superintendent of Documents,
United States Government Information,
P.O. Box 371 954,
Pittsburg, PA 15250-7954, USA
Telephone: 202-512-1800

IEEE

Institution of Electrical & Electronics Engineers Inc.,
445 Hoes Lane,
Piscataway, NJ 08854, USA
Telephone: 732-981-0060

ISO

International Organisation for Standardisation,
1, rue de Varembe, Case postale 56, CH-1211,
Geneve 20, Switzerland:
(Canadian Representative) Standards Council of Canada,
45 O'Connor Street, Suite 1200,
Ottawa, Ontario K1P 6N7, Canada
Telephone: 613-238-3222
Publications from: Global Info Centre Canada,
240 Catherine Street,
Ottawa, Ontario K2P 2G8, Canada
Telephone: 613-237-4250
Fax: 613-237-4251

SAE

Society of Automotive Engineers,
400 Commonwealth Drive,
Warrendale, PA 15096, USA
Telephone: 412-776-4841

UL

Underwriters Laboratories Marine Department.
P.O. Box 13995, 12 Laboratory Drive,
Research Triangle Park, NC 27709, USA
Telephone: 919-549-1400
Publications from: Global Engineering Documents Inc.,
15 Inverness Way East,
Englewood, CO 80112, USA
Telephone: 800-854-7179

Construction Standards for Small Vessels

Section 2: Vessel Identification and Compliance

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Section 2: Vessel Identification and Compliance

Application: **Pleasure Craft Only**

Hull Identification Number (HIN)

1. The Hull Identification Number provides a uniform method for identifying:
   (a) any specific boat;
   (b) the construction standards that apply to that specific boat;
   (c) boats subject to a manufacturer's defect recall; and
   (d) a lost or stolen boat.

Identification Code

2. The Identification Code consists of twelve consecutive characters (capital letters of the alphabet or Arabic numerals) with no spaces, slashes (obliques), or hyphens between them, indicating:

   (a) a three digit manufacturer's identification code (MIC) followed by;
   (b) a five character manufacturer's hull serial number; and
   (c) four figures giving the date of manufacture.

Manufacturer's Identification Code (MIC)

3. The Manufacturer's Identification Code consists of three characters (block capitals or numbers) forming the first three characters of the HIN, as issued by the department, it identifies the plant of manufacture, unique to the organization or individual to whom it is issued.

Hull Serial Number

4. The fourth through eighth characters of the HIN are the individual Hull Serial Number which is defined by the manufacturer. No two boats shall be assigned the same Hull Serial Number. The Hull Serial Number shall consist of capital letters of the alphabet or Arabic numerals or both, except that the letters "I", "O", and "Q" shall not be used.

Date of Manufacture

5. The ninth through twelfth characters of the HIN indicate the date of manufacture. The ninth character is a capital letter of the alphabet indicating the month from when the boat is considered to have commenced construction and is defined as follows:

A = January, B = February, C = March, D = April,
E = May, F = June, G = July, H = August,
I = September, J = October, K = November, L = December.

6. The tenth is an Arabic numeral designating the last digit of the year of manufacture. Characters eleven and twelve are Arabic numerals marking the model year of the boat.

7. A typical example of a complete twelve digit HIN is: A boat where construction commenced in July 1990 for the 1991 model year:

ABC2AB41G091

Manufacturers Identification Code	Hull Serial Number	Commencement of Construction	Model Year
ABC	2AB41	G0	91

Country Code: Optional Addition to Hull Identification Number

8. Manufacturers of boats have the option of adding the prefix, e.g. "CA-" (block capitals and hyphen) in front of the HIN, a typical example of a fifteen character HIN including the country code is: CA-ABC2AB41G091. This is a mandatory requirement for manufacturers exporting to some countries (for example: The European Community).

9. This option is not part of the accepted mutual recognition of Hull Identification Numbers between Canada and the United States. Manufacturers exporting to the United States should check with US authorities on their acceptance of this fifteen digit Hull Identification Number before marking their products.

Marking of the Hull

10. The HIN shall be permanently affixed into the hull or hull member. No character of the HIN is to be less than 6 mm ($^1/_4$ in.) in height and width. The HIN shall be located:

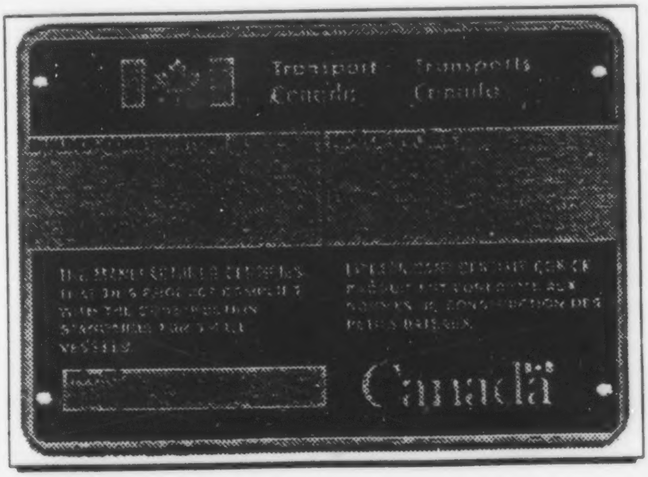
    (a) on the upper starboard quarter of the transom; or
    (b) the starboard side at the aft end of the hull that bears the rudder or steering mechanism if the boat has no transom; or
    (c) the outermost starboard side at the after end of the hull, if the boat has more than one hull and no transom.

Conformity Notice

11. Every boat required to be constructed according to these standards (that is not required to have a Capacity Notice) shall have affixed to it, in a clearly visible location, a Conformity Plate, or (if it is a 'home-built boat' or a boat manufactured or imported by a company no longer in business) a Single Vessel Plate. Both are issued by the Department, attesting to the fact that the vessel is built in accordance with these standards. It is the responsibility of the boat owner to ensure that the above requirements are met.

Example of a Conformity Plate Containing the following

12. Name of Manufacturer, Manufacturers Identification Code, Model Type and or Number, Plate Number.

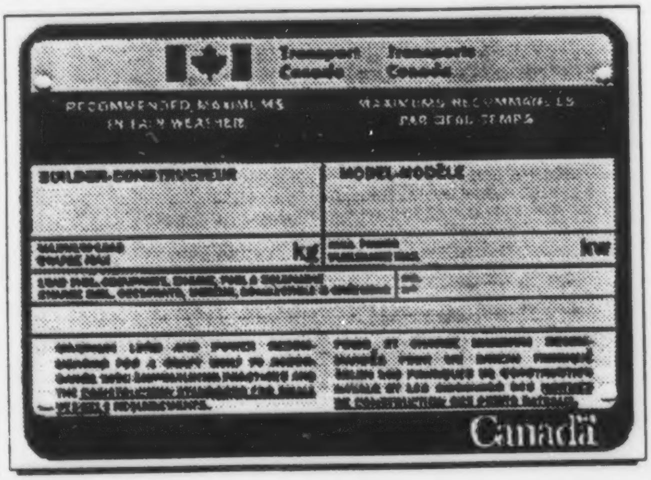

Transport Canada
Transports Canada
Canada

This plate is issued by the Canadian Coast Guard.

The reference to Transport Canada is to be removed later in 1999.

Example of a Single Vessel Plate Containing the following

13. Home Built or Discontinued Product, Model Type and or Number, and Plate Number.


Transport Canada
Transports Canada
RECOMMENDED MAXIMUMS IN FAIR WEATHER
MAXIMUMS RECOMMANDÉS PAR BEAU TEMPS
BUILDER-CONSTRUCTEUR
MODEL-MODÈLE
kg
kw
Canada

This plate is issued by the Canadian Coast Guard.

The reference to Transport Canada is to be removed later in 1999.

Capacity Notice

14. Every boat not over 6.0 m (20 ft) in length, that is fitted with (or is capable of being fitted with), engine power totaling 7.5 kW (10 hp) or more, shall have affixed to it, in a clearly visible location, a Capacity Plate, or (if it is a 'home built boat' or a boat manufactured or imported by a company no longer in business) a Single Vessel Plate. Both are issued by the Department and attest to the fact that the vessel is built in accordance with these standards. This does not apply to personal watercraft, which shall have affixed a conformity notice in accordance with paragraphs 11-13. It is the responsibility of the boat owner to ensure the above requirements are met.

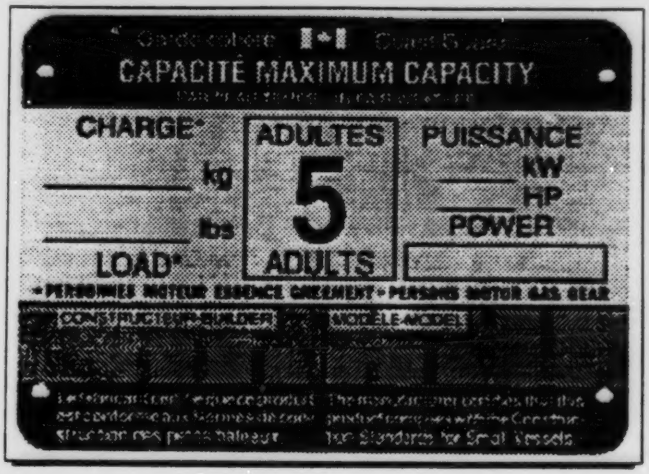
Recommended Maximum Requirements to be Permanently Marked on Capacity Plate and Single Vessel Plate

15. Every outboard powered boat that conforms to paragraph 14 shall have issued to it a Capacity Plate or Single Vessel Plate on which the following ratings may be marked:
    a) the recommended maximum gross load capacity for that boat;
    b) the recommended maximum number of adult persons to be carried;
    c) the recommended maximum safe limits of engine power.

16. Every powered boat that conforms to paragraph 14 and is not covered by paragraph 15 shall have issued to it a Capacity Plate or Single Vessel Plate on which the following ratings may be marked:
    a) the recommended maximum gross load capacity for that boat;
    b) the recommended maximum number of adult persons to be carried.

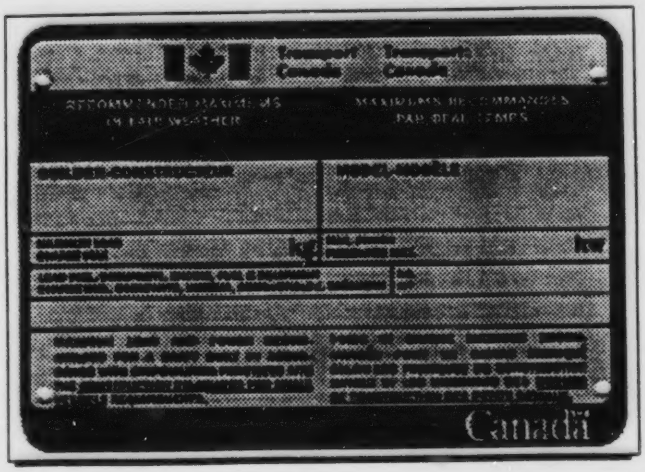
Example of a Capacity Plate Containing the Following Information

17. Name of manufacturer, Manufacturers Identification Code, Model Type and/or Number, Plate Number, Recommended Maximum Load, People, Engine Power.


CAPACITÉ MAXIMUM CAPACITY
CHARGE*
kg
lbs
LOAD*
ADULTES
5
ADULTS
PUISSANCE
KW
HP
POWER
PERSONNES MOTEUR ESSENCE GREEMENT PERSONS MOTOR GAS GEAR
CONSTRUCTEUR-BUILDER
MODELE-MODEL
The manufacturer certifies that this product complies with the Construction Standards for Small Vessels

Example of a Single Vessel Plate Containing the Following Marked Information

18. Home Built or Discontinued, Model Type and/or Number, Plate Number. Recommended Maximum Load, People, Engine Power.



This plate is issued by the Canadian Coast Guard.

The reference to Transport Canada is to be removed later in 1999.

Construction Standards for Small Vessels

Section 3: Hull Construction Requirements

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Section 3: Hull Construction Requirements

Application: **No. 1 to 9 and 12 Pleasure and Commercial Vessels**
No. 10 to 11 Commercial Craft only
No. 13 to 15 Pleasure Craft only

Strength

1. Structural strength shall be commensurate with the intended service of the vessel, taking into account the maximum anticipated loads.

2. Special attention shall be paid to alignment and continuity of structural members and efficiency of structural connections and endings. All openings and cut-outs shall have well-rounded corners and not impair the required structural strength of the hull and superstructure.

3. Seats, thwarts, bulkheads, and other major structural components which are attached to the vessel's shell shall be robustly connected in a manner that does not create undue stress concentrations.

4. Throughout the construction the builder shall select materials compatible to the intended use of the vessel. Materials subjected to significant stress at high or low temperatures shall have properties resistant to failure at the full range of anticipated temperatures.

Fittings and Through-hull Openings/Penetrations

5. All openings and penetrations in watertight or weathertight structures should be kept to a minimum and fitted with efficient means of closure that are of equivalent strength to the structure in which they are located and such that they will maintain its watertight or weathertight integrity.

6. Through-hull penetrations should be kept to a minimum consistent with the operational needs of the vessel and adequate local strength compensation may be necessary. Means should be provided for positively shutting off underwater penetrations and, where fitted in a fire risk area, the means of shut-off should be of material that is not susceptible to fire damage.

7. Local stiffening and reinforcement shall be provided in way of masts, deck mounted machinery and equipment, mooring cleats, fairleads, towing bollards and other miscellaneous fittings. Such stiffening and reinforcement shall take into account the maximum anticipated loads.

Doors, Hatches, Windows and Port Lights

8. Doors, hatches, windows and port lights shall be of weathertight construction, capable of retaining weathertight integrity in all anticipated operational conditions.

9. Windows, port lights and skylights should be fitted with safety glass or equivalent material of adequate strength.

Guardrails and Stanchions, etc.

10. Where practicable, the perimeter of an exposed deck that is normally used by persons on board shall be fitted with guard rails and stanchions, bulwarks, strong netting, or any combination thereof, to protect them from falling overboard while the vessel is underway.

11. When the proper working of the vessel is not impeded, the guard rails and stanchions, bulwarks, strong netting, or any combination thereof, on passenger vessels shall be at least 915 mm (3 ft - 0 in) above the weatherdeck. The distance between the horizontal rails should not be more than 230 mm (9 in), unless strong netting is provided.

Ballast

12. When provided, solid ballast shall be adequately secured.

Personal Watercraft

Definition

13. A **personal watercraft** is defined as a vessel less than 4 m (13 ft - 0 in) in length, which uses an internal combustion engine powering a water jet pump as its primary source of propulsion, and is designed to be operated by a person or persons sitting, standing, or kneeling on, rather than within, the confines of a hull.

Alternative Construction Standards

14. All **personal watercraft** built on or after 1 January 1997 may, as an alternative to other Sections of this standard, be constructed in accordance with ISO 13590 *Small Craft – Personal Watercraft*.

15. All **personal watercraft** must have affixed a Conformity Notice in accordance with Section 2 paragraphs 11-13.

Warning Label for the Ventilation of the Engine Compartment

15. All **personal watercraft** built on or after 1 January 1997 must carry a warning label prominently displayed, that may be included with other information, and which states that the seat/lid is to be opened to minimize the risk of fire and explosion. The warning label described shall be generally as shown in Diagram 3-1.

Personal Watercraft Warning Label

WARNING

Gasoline vapours may cause fires or explosions.
Do not overfill fuel tank.
Keep the craft away from open flames and sparks.
Do not start craft if liquid gasoline or vapours are present.
Always replace engine cover (or seat) before starting.

Diagram 3-1

Construction Standards for Small Vessels

Section 4: Hull Design Requirements

Vessels Up To Six Metres In Length

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Section 4: Hull Design Requirements

Vessels Up To Six Metres In Length

Application: **Pleasure Craft and Commercial Vehicles which are less than or equal to 6 m (20 ft) in length**

Mono-Hull Boats

Recommended Maximum Load Calculation

1. This sub-section applies to all powered craft up to 6 m (20 ft) length of hull.

Definitions

2. Total Volume is the volume of the boat below the Static Float Plane.

3. Static Float Plane means the plane below all points of major leakage and the most forward point of the boat below which the maximum displacement of the boat exists. (See Diagram 4-1)

Note: Ventilation openings may become points of major leakage.
(Alternative) The plane passing below all points of major leakage and equal distances, either above or below the intersections of the sheer with the stem and stern (transom) when the boat is transversely level. The intersections are determined when the boat is longitudinally level, by being supported on its keel at points that are 40% and 75% of the boat's overall length, aft of the bow, and are at points where a line that is 45 degrees to a level floor is tangent to the bow and stern of the boat.
Scuppers, freeing ports, drains, overboard discharge, and centreboard trunk openings may be located below the static float plane. Other openings are permitted below the static float plane in the motor well for outboard engine controls or fuel lines. Such openings shall be provided with a boot or other means to minimize leakage.

4. A Motor Well with the following criteria is deemed to be efficient if:

   (a) it tends to reverse the flow of any water striking the forward face of the well rather than directing it upward and forward;
   (b) it has control and/or supply openings of minimum size for safe operation; such openings to be located as high as possible and not lower than the normal motor cut-out in the transom, unless fitted with sealing devices to prevent flooding through the openings; and
   (c) it has adequate drains fitted.

5. Calculation Length means: for power driven vessels it is the length, measured parallel to the Static Float Plane, between two vertical planes normal to the centre line of the craft, erected from the foremost integral part of the hull, and erected aft through a point located on the transom at the midpoint between the static float plane and the hull bottom.

6. The weight of one Person is assumed as 75 kg (165 lb).

7. Gross Load (kg) = [Total Volume (m^3) - Motor Well Volume (m^3)] x 200.

The Recommended Number of Persons

8. The Recommended Number of Persons must not exceed the number of designated occupant positions.

9. $$\text{Number of Persons} = \frac{\text{Gross Load (kg)} - \dfrac{\text{Boat Weight (kg)}}{5} - \text{Engine Weight (kg)}}{75}$$

10. Engine Weights are in accordance with Table 4-1.

Length and Width Definitions for Load Calculations

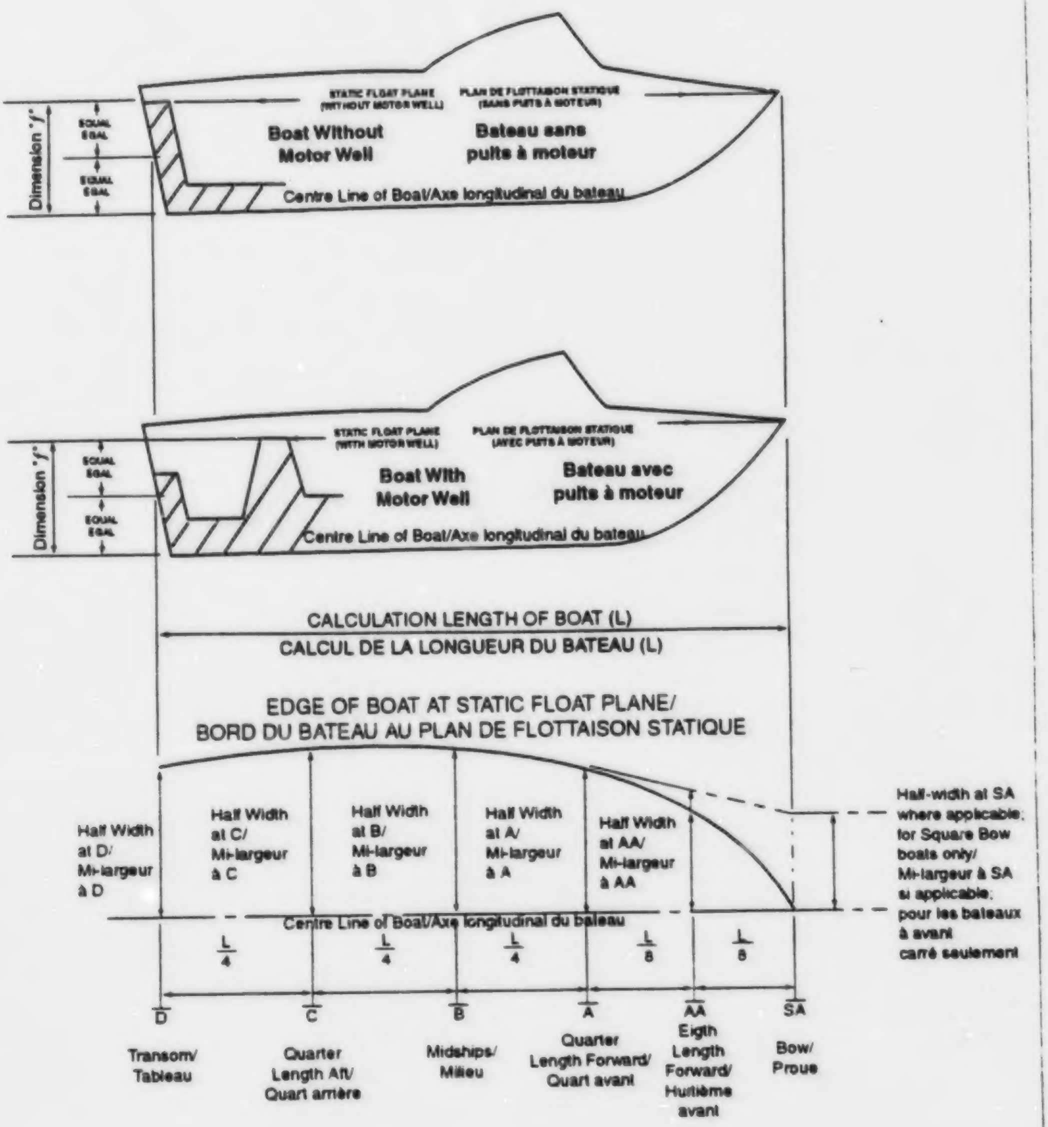

Dimension 'f'
EQUAL
EGAL
EQUAL
EGAL
STATIC FLOAT PLANE
(WITHOUT MOTOR WELL)
PLAN DE FLOTTAISON STATIQUE
(SANS PUITS À MOTEUR)
Boat Without
Motor Well
Bateau sans
puits à moteur
Centre Line of Boat/Axe longitudinal du bateau
Dimension 'f'
EQUAL
EGAL
EQUAL
EGAL
STATIC FLOAT PLANE
(WITH MOTOR WELL)
PLAN DE FLOTTAISON STATIQUE
(AVEC PUITS À MOTEUR)
Boat With
Motor Well
Bateau avec
puits à moteur
Centre Line of Boat/Axe longitudinal du bateau
CALCULATION LENGTH OF BOAT (L)
CALCUL DE LA LONGUEUR DU BATEAU (L)
EDGE OF BOAT AT STATIC FLOAT PLANE/
BORD DU BATEAU AU PLAN DE FLOTTAISON STATIQUE
Half Width at D/ Mi-largeur à D
Half Width at C/ Mi-largeur à C
Half Width at B/ Mi-largeur à B
Half Width at A/ Mi-largeur à A
Half Width at AA/ Mi-largeur à AA
Half-width at SA where applicable; for Square Bow boats only/ Mi-largeur à SA si applicable; pour les bateaux à avant carré seulement
Centre Line of Boat/Axe longitudinal du bateau
L/4
L/4
L/4
L/8
L/8
D
C
B
A
AA
SA
Transom/ Tableau
Quarter Length Aft/ Quart arrière
Midships/ Milieu
Quarter Length Forward/ Quart avant
Eigth Length Forward/ Huitième avant
Bow/ Proue

Diagram 4-1

Hull Cross Sections

ALL MEASUREMENTS TO BE IN MILLIMETRES/TOUTES LES DIMENSIONS DOIVENT ÊTRE EN MILLIMÈTRES

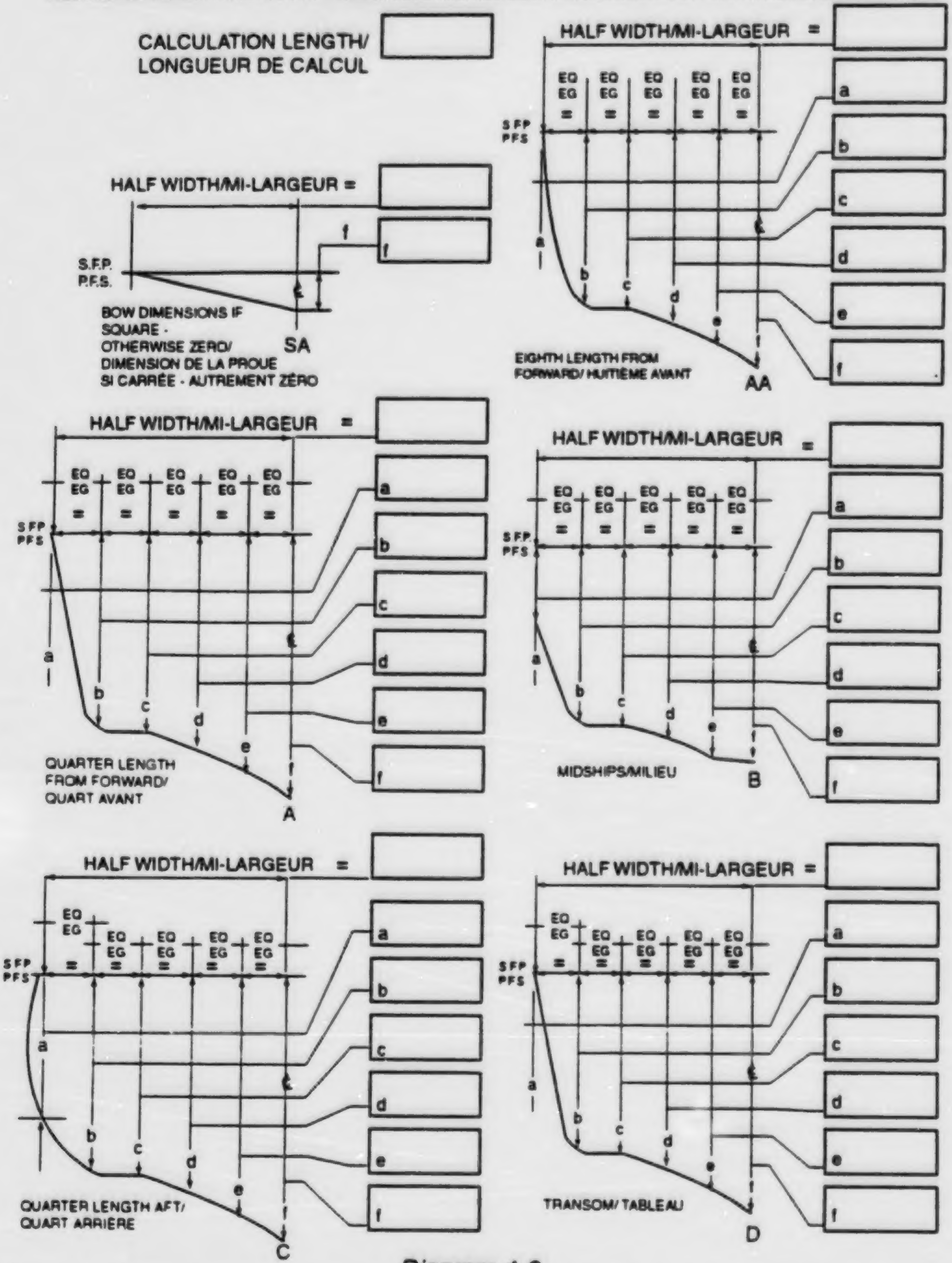

CALCULATION LENGTH/
LONGUEUR DE CALCUL
HALF WIDTH/MI-LARGEUR =
f
S.F.P.
P.F.S.
℄
BOW DIMENSIONS IF SQUARE - OTHERWISE ZERO/
DIMENSION DE LA PROUE SI CARRÉE - AUTREMENT ZÉRO
SA
EQ
EG
=
a
b
c
d
e
f
EIGHTH LENGTH FROM FORWARD/ HUITIÈME AVANT
AA
QUARTER LENGTH FROM FORWARD/ QUART AVANT
A
MIDSHIPS/MILIEU
B
QUARTER LENGTH AFT/ QUART ARRIÈRE
C
TRANSOM/ TABLEAU
D

Diagram 4-2

NOTE: Dimension 'a' on half sections AA, A, B, C, and D, will be zero unless the hull topside down from the Static Float Plane is vertical or lays outward.

NOTA : La dimension « a » aux sous-sections AA, A, B, C et D sera de zéro, à moins que la coque inversée depuis le plan de flottaison statique soit verticale ou qu'elle repose vers l'extérieur.

Table 4-1: Weights in Kilograms of Gasoline Outboard Engine and Related Equipment for Various Boat Kilowatt Ratings

Transoms Designed for Single Motors

Boat Kilowatt Rating	Dry Motor Weight (kg)	Controls (kg)	Propeller (kg)	Battery Weight (kg)	Portable Tank Weight (kg)	Total Weight (kg)
0-1.5	13.75	-	incl.	-	-	13.75
1.6-2.9	18.25	-	incl.	-	-	18.25
3.0-5.25	32	-	incl.	-	11.5	43.50
5.3-11.2	48	-	incl.	9	23	80
11.3-18.7	70	7	incl.	21	46	144
18.8-33.5	93	7	incl.	21	46	167
33.6-44.75	116	7	incl.	21	46	190
44.8-56	139	7	4.5	21	46	218
56.1-75	168	7	4.5	21	46	248
75.1-108.1	184	7	7	21	46	265
108.2-172	218	7	7	21	46	299
172-up	264	7	7	21	46	345

Transoms Designed for Twin Motors

Boat Kilowatt Rating	Dry Motor Weight (kg)	Controls (kg)	Propeller (kg)	Battery Weight (kg)	Portable Tank Weight (kg)	Total Weight (kg)
37.25-67	186	14	9	41	46	296
67.1-89.5	232	14	9	41	46	342
89.6-112	278	14	9	41	46	388
112.1-149	336	14	9	41	46	445
149.1-216.25	368	14	9	41	46	495
216.26-345	436	14	9	41	46	546
345-up	527	14	9	41	46	637

Recommended Maximum Power Calculation

11. This subsection applies to all outboard powered pleasure craft up to 6 m (20 ft) length of hull.

Definitions

12. Numeral =

$$\text{Numeral} = \frac{\text{Gross Load (kg)} \times \text{Transom Width (m)}}{1.382}$$

Numeral/Power (kW) relationship is graphically illustrated in Diagram 4-3 (Curves 1, 2, and 3).

13. Curve 1 (criteria)

- boats must be at least 4.750 m (15 ft - 7 in) in length
- the numeral must be at least 600
- the transom width must be at least 1.220 m (4 ft - 0 in)
- the boat must be fitted with motor and steering controls that are at least one quarter the length of the Static Float Plane forward of the transom
- flat bottom boats and home built boats are not to be rated from this curve

14. Curve 2 (criteria)

- the numeral must be at least 225
- boats with numerals 225 to 325 must have a transom width of at least 1.140 m (3 ft - 9 in)
- boats with numerals of 326 and above must have a transom width of at least 1.220 m (4 ft - 0 in)
- the boat must be fitted with motor and steering controls that are at least one quarter the length of the Static Float Plane forward of the transom
- flat bottom boats are not to be rated from this curve

15. Curve 3 (criteria)

- all boats with numerals 224 or less
- all boats not rated on Curves 1 and 2
- all flat bottom boats, dories, and dinghies
- all boats with motor and steering controls aft of one quarter the length of the static float plane forward of the transom

16. Power ratings (kW) are to be taken from the attached graphs as follows:

(a) column 1 for production boats, [1 hp = 0.745 kw]; and
(b) column 2 for individual boats. [1 hp = 0.745 kw].

17. Racing hydroplanes and similar low volume racing craft will be rated to a maximum of 7.4 kw (9.9 hp). This type of craft may use engine power greater than 7.4 kw (9.9 hp) only when engaged in, or in preparation for an official competition.

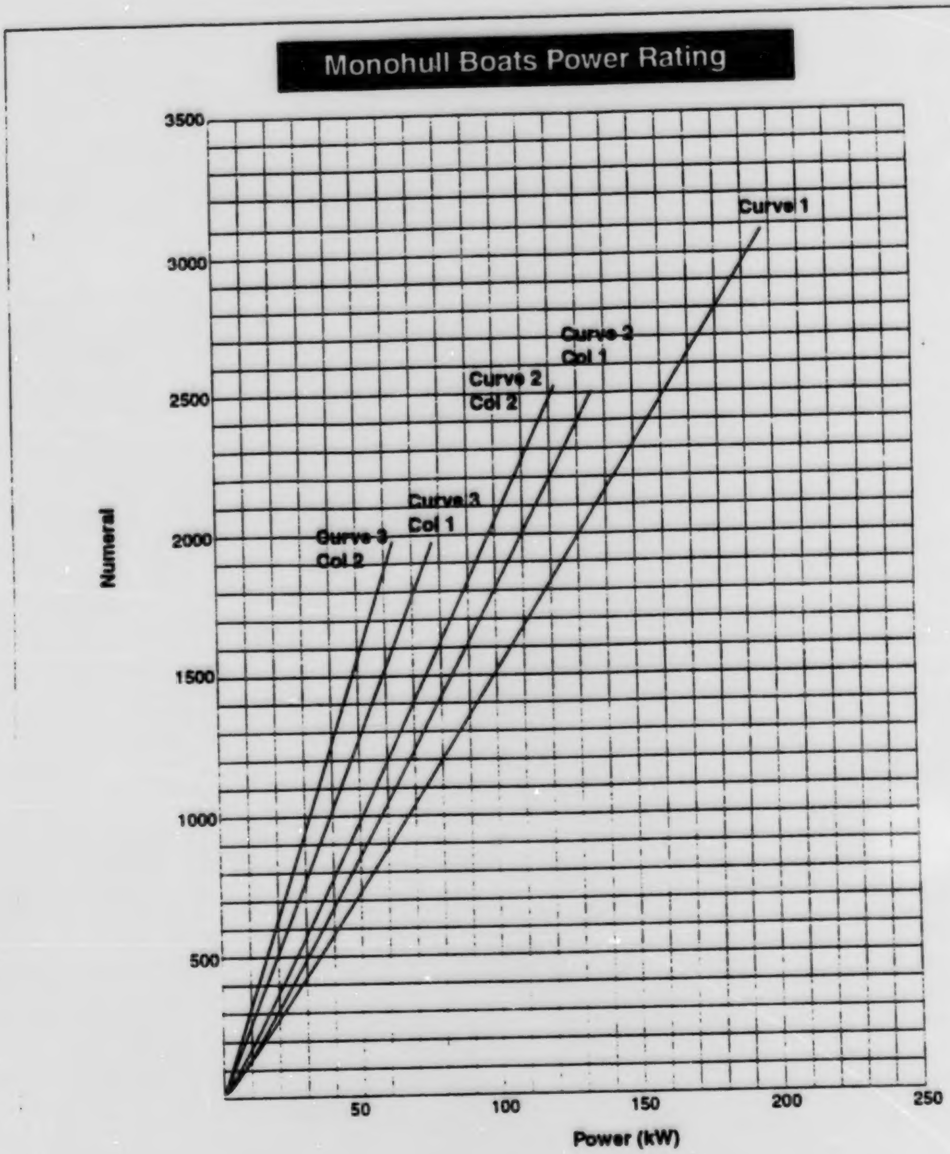


Diagram 4-3

Monohull Boats

Minimum Flotation

18. Flotation Requirements – Numerical methods or physical testing may be used to determine compliance with the flotation criteria (paragraphs 19-40).

Application

19. This subsection applies to all powered craft up to 6m (20 ft) in length having no permanent sleeping accommodation, except:

    (a) boats powered by outboard engines which are required to meet the requirements of the level flotation standard in paragraphs 41-48; and
    (b) personal watercraft.

Definitions

20. Maximum Load means the sum of all weights that may be carried in a given hull, including persons, equipment, engine, controls and fuel, and for the purpose of these standards, is considered to be 200 kg/m^3 (12.5 lb/ft^3) of the internal volume of the hull shell.

21. Live Load means that part of the Maximum Load which is taken up by persons that may be carried in a given hull, and is considered to be 60% of that weight which, when placed along the outer edge of either side of the person carrying area, would heel the boat to the maximum angle without taking water on board resulting in downflooding.

22. Bilge means that area of the boat, below a height of 100 mm (4 in) measured from the lowest point in the boat, except for engine rooms, where liquid can collect when the boat is in the static floating position.

23. Engine Space Bilge means that area in the engine room, or a connected compartment, below a height of 30 cm (12 in) (measured from the lowest point in those compartments) where liquid can collect when the boat is in the static floating position.

24. Engine Space means that compartment which contains permanently installed engine(s), including connected compartments.

25. Connected means allowing a flow of water in excess of 7.5 ml ($^1/_4$ U.S./fl. oz) per hour from the engine room bilge into any other compartment.

26. Sealed Compartment means an enclosure that can resist an exterior water level of 30 cm (12 in) without seepage of more than 7.5 ml ($^1/_4$ U.S./fl. oz) per hour.

27. Open Compartment means a compartment which has at least 0.34 m^2 (15 in^2) of open area directly exposed to the atmosphere for each m^3 (35 ft^3) of net compartment volume.

General

28. Every boat shall be fitted with inherently buoyant flotation material that provides sufficient buoyancy to keep the boat from sinking when it is swamped and the passengers are clinging to the outside of the boat, where the individual weights of the motor, the passengers and the equipment carried in or attached to the boat do not exceed the weights used in the formula set out in paragraph 34.

29. The buoyancy required by paragraph 28 shall not be provided by air chambers greater than 0.014 m^3 (0.5 ft^3) in volume or by any air chambers which are integral with the hull structure.

30. The quantity of flotation material required for a boat to meet the requirements of paragraph 28 shall be calculated using the formula set out in paragraph 34.

31. Flotation material shall be placed or secured so that it cannot be accidentally moved or floated out of place.

32. Flotation material shall be protected, as far as practicable, from mechanical damage.

Calculation Formulae

33. Determine swamped weight of boat and fittings other than engine and related equipment (Ws).

$Ws = Wh_1k_1 + Wh_2k_2 + Wh_3k_3 + Wd + 0.69Wf$:

where:
Wh_1, Wh_2, Wh_3 is the dry weight of various materials used in hull construction;
Wd is the weight of deck and superstructure;
Wf is the weight of permanent fittings not included in above; and
k_1, k_2, k_3 is a conversion factor for converting dry material (h) to give equivalent weight when submerged in fresh water (Table 4-2).

34. Determine amount of flotation required (Wfl):

$Wfl = Ws + 0.75\ We + 0.25\ Wl$
where:
Ws is the swamped weight of the boat;
We is the dry weight of the engine and related equipment as installed;
Wl is the Maximum Load less weight of installed engine and related parts.

35. Determine Volume of Buoyant Material Required (Vb):

$$Vb = \frac{Wfl}{1000 - B}$$

where:
B is the weight of 1 m^3 of buoyant material used.
Vb is the volume of flotation in m^3.

Table 4-2: Factors for Converting Various Boat Materials from Dry Weight to Submerged Weight

Materials	Specific Gravity	Factor, (k)
Lead	11.38	0.91
Copper	8.91	0.89
Monel Metal	8.91	0.89
Bronze	8.88	0.89
Nickel	8.61	0.88
Brass	8.56	0.88
Stainless Steel (rolled)	8.00	0.88
Steel	7.85	0.88
Cast Iron	7.08	0.86
Zinc-Cast Alloy	6.63	0.85
Aluminum	2.73	0.63
Glass	2.60	0.62
Ferro-Cement	2.40	0.58
Rubber	1.51	0.34
Fiberglass-Laminate	1.50	0.33
Kevlar-Laminate	1.30	0.24
Plexiglass-Lucite	1.20	0.17
A.B.S.	1.12	0.11
Teak	0.99	-0.01
Oak-White	0.85	-0.18
Oil-Diesel	0.85	-0.18
Gasoline	0.73	-0.37
Oak-Red	0.63	-0.56
Blandex-Particle Board	0.58	-0.70
Mahogany-Philippine	0.58	-0.72
Mahogany-Honduras	0.56	-0.78
Ash	0.56	-0.78
Yellow Pine	0.55	-0.81
Fir Plywood	0.55	-0.81
Mahogany-Plywood	0.54	-0.83
Royalex	0.50	-0.95
Mahogany-African	0.51	-0.96
Fir	0.51	-0.96
Cedar-Port Orford	0.48	-1.08
Spruce	0.45	-1.22
Pine-White	0.42	-1.38
Cedar-White	0.33	-1.95
Cork	0.24	-3.17
Balsa	0.16	-5.24

$$\text{FACTOR (k)} = \frac{[\text{Specific Gravity} - 1]}{\text{Specific Gravity}}$$

Specific Gravity of fresh water, at 4° C = 1.

Flotation Material

36. Flotation material, when used in the bilge or engine room bilge, shall not reduce in volume by more than 5% after being immersed at 29°C in each of the following:

    (a) reference fuel B (gasoline), of ASTM D-471, dated March 28, 1975;
    (b) reference oil no. 2, of ASTM D-471, dated March 28, 1975; and
    (c) a 5% solution of trisodium phosphate in water.

37. The immersion time for flotation material used in the bilge shall be 24 hours.

38. The immersion time for flotation material used in the engine room bilge shall be 30 days.

39. Flotation material, when used in an engine room which is not open to the atmosphere, shall not reduce in volume by more than 5% after being immersed in a fully saturated gasoline vapour atmosphere for 30 days at 38°C.

40. The requirements of this subsection do not apply to flotation material used in a sealed compartment.

Level Flotation

41. Numerical methods or physical testing may be used to determine compliance with the relevant flotation criteria (paragraphs 44-54).

42. This subsection applies to all outboard powered boats up to 6 m (20 ft) in length except, closed boats, sailboats, canoes, kayaks, inflatable boats, amphibious craft and boats designed for racing.

43. Inboard and Inboard/Outboard craft are required to meet the standards of paragraphs 18-40 and are not included in this subsection.

Definitions

44. Person Carrying Area means that area of a boat in which people may assume a normal safe sitting or standing position while the boat is in operation (Diagram 4-4).

45. The Length of the Person Carrying Area is the distance along the centreline of the boat between two vertical lines, one forward, and one aft, of the area, when the boat is on an even keel (Diagram 4-4). For boats with a curved stem inside the Person Carrying Area, the forward vertical line intersects the stem at a point where a line drawn at 45° to the horizontal is tangential to the stem. For boats with enclosed cabins the forward vertical line is perpendicular to the centreline at the forward limit of that area where there is 0.6 m (2 ft - 0 in) of headroom between the inside of the cabin top and the swamped waterline.

46. The Breadth of each Person Carrying Area is the distance between two vertical lines at midlength, excluding consoles, of the person carrying area when the boat is upright. For boats with round chines the vertical lines intersect the hull on each side at a point where lines drawn at 45° to the horizontal are tangential to the hull on either side.

47. For the purpose of this subsection, the Bow Reference Area is that area 0.6 m (2 ft - 0 in) aft of the stem of the boat, measured at the top deck or gunwale level.

48. For the purpose of this subsection, the Stern Reference Area is that area 0.6 m (2 ft - 0 in) forward of the transom or engine mount, measured at the top deck or gunwale level.

Preconditioning for Flotation Criteria

49. All fittings supplied by the manufacturer, such as windshields and convertible tops, shall be secured in place.

50. The boat shall be loaded with weights which, when submerged, are equivalent to:

    (a) 50% of the live load of the boat as defined in paragraph 21, up to 250 kg (550 lb) and, if the live load exceeds 250 kg (550 lb), 12% of the excess;
    (b) 25% of the difference between Maximum Load and Live Load after deducting the weight of the engine, battery and full fuel tank from the Maximum Load; and
    (c) weights, when submerged equivalent to the engine, battery and fuel.

    The weights in (a) and (b) shall be placed so that their centre of gravity lies at the centre of the person carrying area, but they shall all be contained within 16% of the person carrying areas, as shown in Diagram 4-5.

    The weights in (c) shall be placed as close as possible to the position of those components they replace.

51. Permanent fuel tanks shall be filled with fuel and sealed.

52. Water and holding tanks shall be filled with fresh water.

53. For the purpose of physical testing, the boat shall be swamped for a period of not less than 18 hours so that all compartments integral with the hull are flooded, no trapped air remains in the hull, and water is free to flow in and out of the hull.

54. Where air chambers are part of the flotation, the two largest shall be perforated so as to allow complete flooding.

Stability Criteria

55. Preconditioning shall be completed as for flotation criteria, except for deployment of live load weights specified in paragraph 50, which shall be redistributed as follows: half of the weight is to be removed from the boat, with the other half arranged on one side of the boat so that the horizontal centre of gravity of the weights falls within 150 mm (6 in) of the outer edge of the person carrying area for at least 70% of its length (Diagram 4-6). The vertical centre of gravity of the weights shall be at least 100 mm (4 in) above the cockpit floor, or if the weights are placed on seats, then 100 mm (4 in) above the seats.

56. While floating in calm, clear water, the boat shall not list more than 30° with the weight redistributed.

57. One part of either the bow or stern reference area as defined shall remain above the surface.

58. The midpoint of the submerged bow or stern reference area shall be not more than 30 cm (12 in) below the surface.

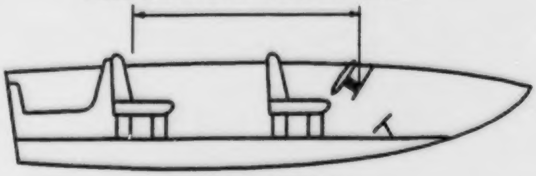
Flotation Criteria without Live Load

59. Preconditioning shall be completed as in paragraphs 49-54, but without the live load.

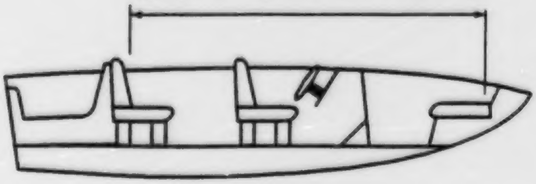
Flotation Criteria with Live Load

60. The boat shall meet the requirements as specified in paragraphs 49-54.

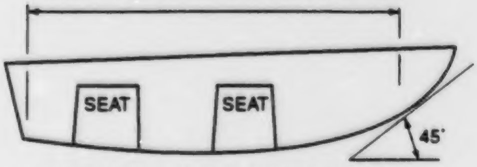
Measuring Person Carrying Area Length


LENGTH OF PERSON CARRYING AREA

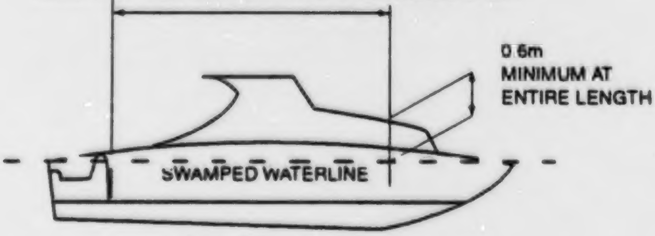
BOAT WITH DECK


LENGTH OF PERSON CARRYING AREA

BOAT WITH CENTRE CONSOLE


LENGTH OF PERSON CARRYING AREA
SEAT
SEAT
45°

OPEN BOAT WITH CURVED STEM


LENGTH OF PERSON CARRYING AREA: INSIDE CABIN
0.6m
MINIMUM AT
ENTIRE LENGTH
SWAMPED WATERLINE

BOAT WITH CABIN

Diagram 4-4

Location of Centre of Gravity, Level Flotation

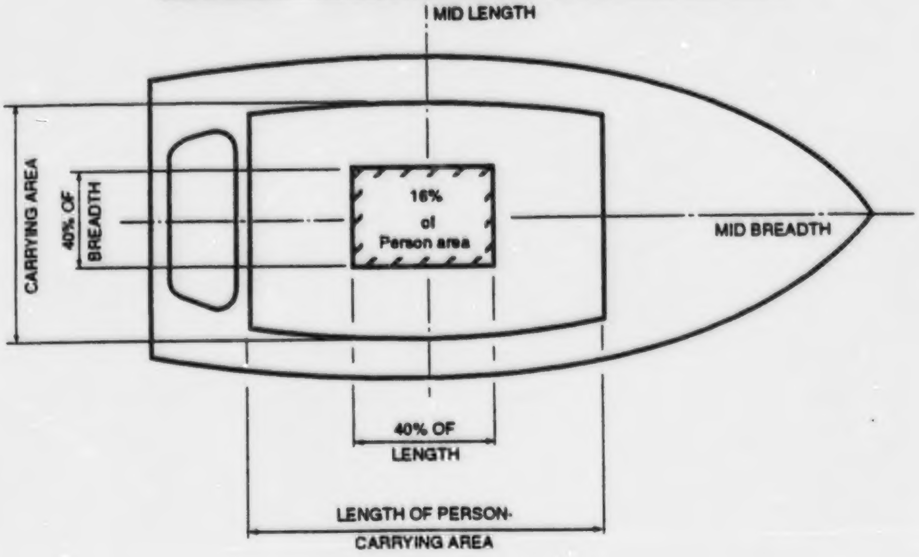

MID LENGTH
CARRYING AREA
40% OF BREADTH
16% of Person area
MID BREADTH
40% OF LENGTH
LENGTH OF PERSON-CARRYING AREA

Diagram 4-5

Location of Centre of Gravity of Weights – Stability Test

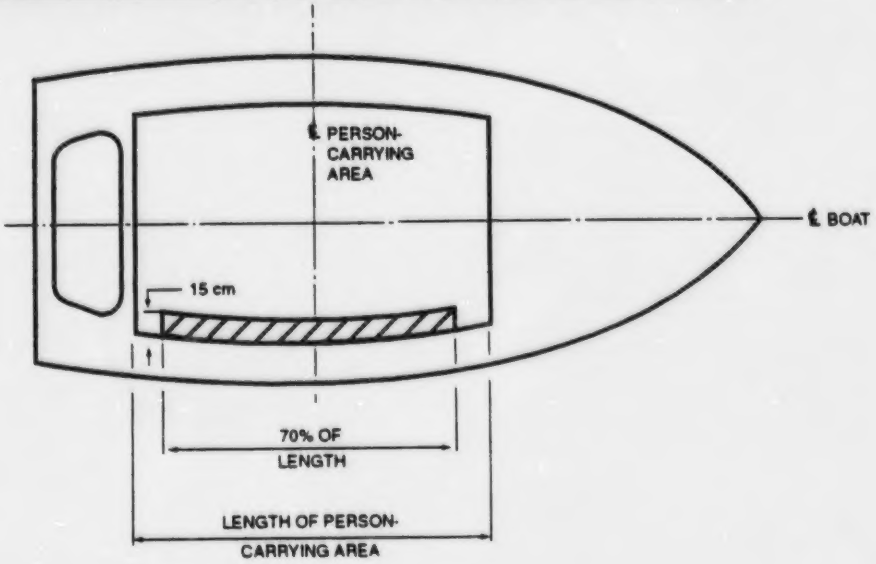

℄ PERSON-CARRYING AREA
℄ BOAT
15 cm
70% OF LENGTH
LENGTH OF PERSON-CARRYING AREA

Diagram 4-6

Multihull Boats

Calculation Criteria

61. The criteria for developing the maximum recommended ratings is based on the flotation provided by the pontoons/multihulls. The following design conditions shall apply:

(a) the boat shall have only one deck;
(b) the deck does not extend beyond the width of the pontoons;
(c) the deck lies within the length of the pontoons and does not exceed 80% of their length;
(d) the deck is located no more than 150 mm (6 in) above the pontoons; and
(e) the deck drains freely.

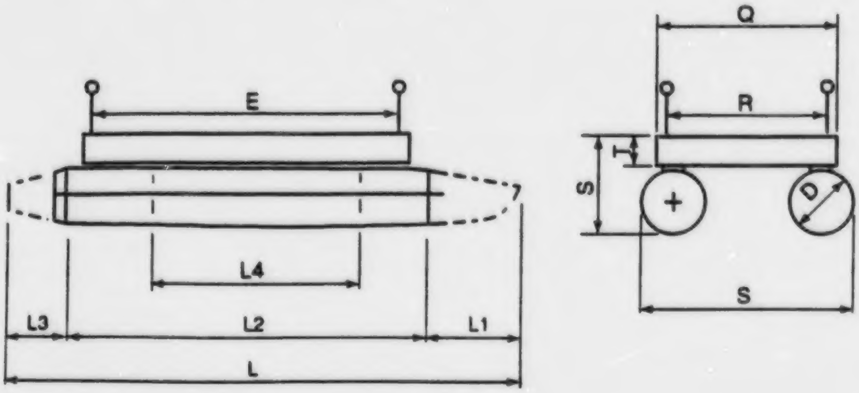


Diagram 4-7

62. Where the design of a pontoon/multihull boat does not conform to the criteria in paragraph 61, the maximum load shall be determined by the following tests, conducted with the maximum engine power which is intended for use with the boat, and with full fuel tanks and operational equipment in the normal positions.

63. The transverse stability shall be tested by adding weights on the highest deck to one side as far outboard as is practical within the limits of the design, until the top of the pontoon hull on the loaded side becomes awash.

64. The longitudinal stability shall be tested by adding weight on the highest deck evenly about a point in the longitudinal centre line of the boat, one quarter of the length of the deck from forward until the edge of the lower deck becomes immersed. This test shall be repeated at the aft end of the craft by adding weight evenly about a point one quarter of the length of the deck from aft until the edge of the lower deck or the top of the motor mounting bracket becomes immersed, whichever occurs first.

65. Ninety percent (90%) of the least of the weights attained in the tests above shall be the maximum weight allowable.

66. Where additional confirmation of a vessel's stability is required, the following approach should be used: Alternative Standard for the Intact Stability of Small Passenger Vessels of Multiple Pontoon Configuration and Restricted Passenger Movement (*'Appendix B' to Stab 5 of the Stability, Subdivision, and Load Line Standards TP 7301*).

Recommended Maximum Load Calculation

67. This subsection applies to all powered craft up to 6 m (20 ft) length of hull.

68. Definitions:

b	is a constant (buoyancy factor) = 1000
V	is the total volume within all of the pontoons in a boat (m^3)
W	is the dry weight (kg) of the boat, deck, railings, console, seats and any other permanent structure and fittings (not the outboard engine or portable fuel tank)

69. Gross Load (kg) is the lesser of $\frac{(V \times b) - W}{2}$

OR Maximum weight allowable as defined in paragraph 65.

The Recommended Number of Persons

70. Definitions:

1 kg/kW	is the ratio of weights to power
Largest Cmpt.	is the largest volume between baffles in any pontoon
# Pontoons	is the total number of pontoons in a boat

$$\text{People} = \frac{(\text{Gross Load} - [1\text{ kg/kW} \times \text{Power}])}{75} \times \left(1 - \frac{\text{Vol. of Largest Cmpt.}}{(\text{Volume} \times \#\text{ of Pontoons})}\right)$$

The Recommended Maximum Power

71. This subsection applies to all outboard powered pleasure craft up to 6 m (20 ft) length of hull.

72. Definitions:

D	Diameter of Pontoons (m)
L	Length of Pontoons (m)

$$\text{Power (kW)} = 3 \times L^2 \times D$$

Inflatable and Rigid Inflatable Boats

73. The criteria for developing the maximum recommended ratings is based on the flotation provided by the inflated tubes, and in addition where applicable, the volume of the hull below the cockpit sole.

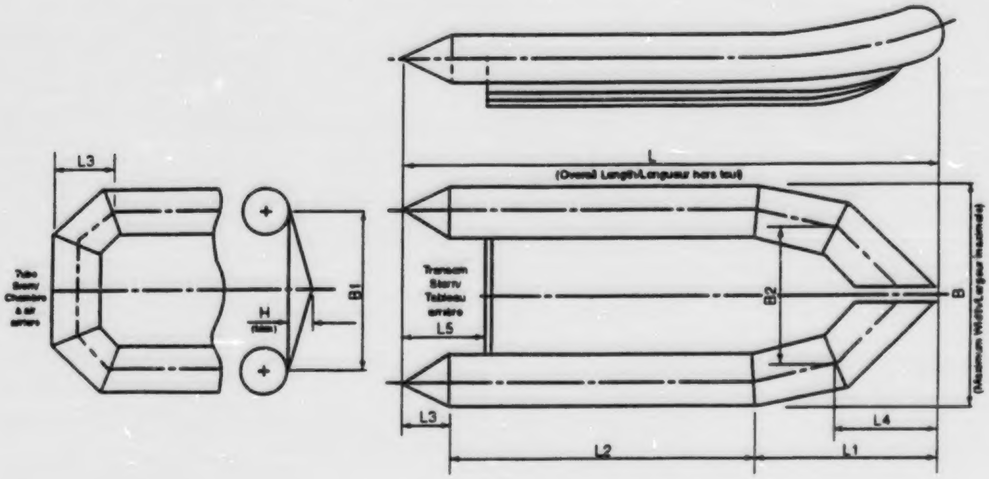

L3
Tube Stern Chambre à air arrière
H
(Min)
B1
L
(Overall Length/Longueur hors tout)
Transom Stern Tableau arrière
L5
B2
B
(Maximum Width/Largeur maximale)
L3
L4
L2
L1

Diagram 4-7

Recommended Maximum Load Calculation

74. This subsection applies to all powered craft up to 6 m (20 ft) length of hull.

75. Definitions:

b is a constant (buoyancy factor) = 1000
V is the total volume of the inflated tubes, plus where appropriate the volume of the rigid or inflated hull below the cockpit sole (m^3)
W is the dry weight of the boat (kg)

Gross Load (kg) = (V x b x 0.75) - W

76. Variance from Calculation Method depending on Design Features.

Load Reduction for Minimum number of air chambers in collar	1 air chamber = 50% load reduction 2 air chambers = 33% load reduction 3 air chambers = 25% load reduction 4 air chambers = No load reduction

The Recommended Number of Persons

77. Definitions:

Machinery and Equipment Allowance Weight = 1 kg / kw
Assumed Weight of Person = 75 kg

$$\text{People} = \frac{\text{Gross Load (kg)} - 1\ \text{kg/kw}}{75}$$

The Recommended Maximum Power

78. This subsection applies to all outboard powered craft up to 6 m (20 ft) length of hull.

79. Definitions:

Total Length of Boat 'L' (metres)
Beam of Boat 'B' (metres)

80. $\text{Power (kW)} = \frac{L}{B} \times V \times \text{Factor } (f)$

Factor (f_1) for Stern - Tube Type (Bracket) = 2.5
Factor (f_2) for Stern - Transom Type under 3.0 m = 6.5
Factor (f_3) for Stern - Transom Type 3.01 to 5.00 m = 9.0
Factor (f_4) for Stern - Transom Type 5.01 m and over = 7.5

81. Variance from Calculation Method depending on Design Features.

Item	**Calculation Method**
1. Stern – Tube Type	Inflatable Calculation (Factor f_1)
2. Stern – Transom Type	Inflatable Calculation (Factor f_2 or f_3 or f_4)
3. Bottom – Soft	Inflatable Calculation
4. Bottom – Hybrid	Inflatable Calculation for Item 6. Inflatable Calculation x 1.25 for Item 7 for boats over 3.0 m in length
5. Bottom – Rigid	Inflatable Calculation
6. Steering – Aft of L/4 forward of Transom	Inflatable Calculation for Items 2, 3 and 4
7. Steering – Fwd of L/4 forward of Transom	Inflatable Calculation x 1.25 for Items 2,3 and 4 for boats over 3.0 m in length
8. Collar – Inflatable	Inflatable Calculation
9. Collar – Rigid	Monohull Calculation

Construction Standards for Small Vessels

Section 6: Ventilation Systems

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Issue number:	0
Dated:	0
Number of pages:	0

Section 6: Ventilation Systems

Application: **Both pleasure craft and commercial vessels**

Definitions

General Principles

1. Neither supply nor exhaust air ducts from engine spaces or engine exhaust outlets shall open into an accommodation space.

2. Electrical components installed in gasoline engine and gasoline tank spaces and any connecting spaces, not open to the atmosphere, shall be ignition protected in accordance with Section 8 of these standards.

Engine and Fuel Tank Space Ventilation (Gasoline)

Application

3. This subsection applies to all craft, regardless of length or accommodation that have gasoline engines for propulsion or other purposes.

Removal of Combustible Vapours

4. Combustible vapours shall be removed from closed engine and fuel tank spaces by means of a ventilation system.

5. Open engine or fuel tank spaces do not require a separate ventilation system, if complying with paragraphs 6-12.

Open Spaces

6. A separate ventilation system is not required if an engine or fuel tank space has:

   (a) at least 0.34 m^2 (3.5 ft^2) of area exposed to the atmosphere per m^3 (35 ft^3) of net space volume; and
   (b) no long or narrow unvented spaces in which a flame front might propagate.

7. The net space volume is the volume of the engine or fuel tank space plus the volume of connecting spaces, unless the connecting spaces either:

   (a) connect to spaces already ventilated by ducting; or
   (b) themselves qualify as open spaces.

8. Spaces communicating with spaces open to the atmosphere, which have interconnecting openings with an area equal to 2% or less of the area between the spaces, shall not be considered as connecting spaces.

9. The volumes of adjacent spaces shall be included in the calculation of duct sizes if the aggregate area of the openings in the separation bulkheads exceeds 2% of the separation bulkhead area between these spaces.

10. The separation bulkhead area used for the calculations in paragraph 9 shall be calculated using a height which is the lesser of either the distance between the bottom and top of the bulkhead between the spaces, or 750 mm (2 ft - 6 in).

11. Long narrow spaces formed by side panels or accommodation decks shall have openings at both ends or along the sides in order to qualify as open spaces.

Open Construction

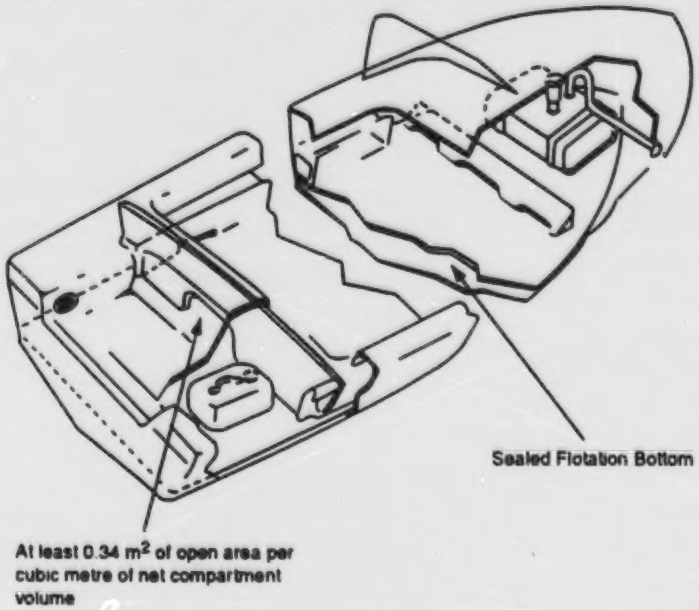
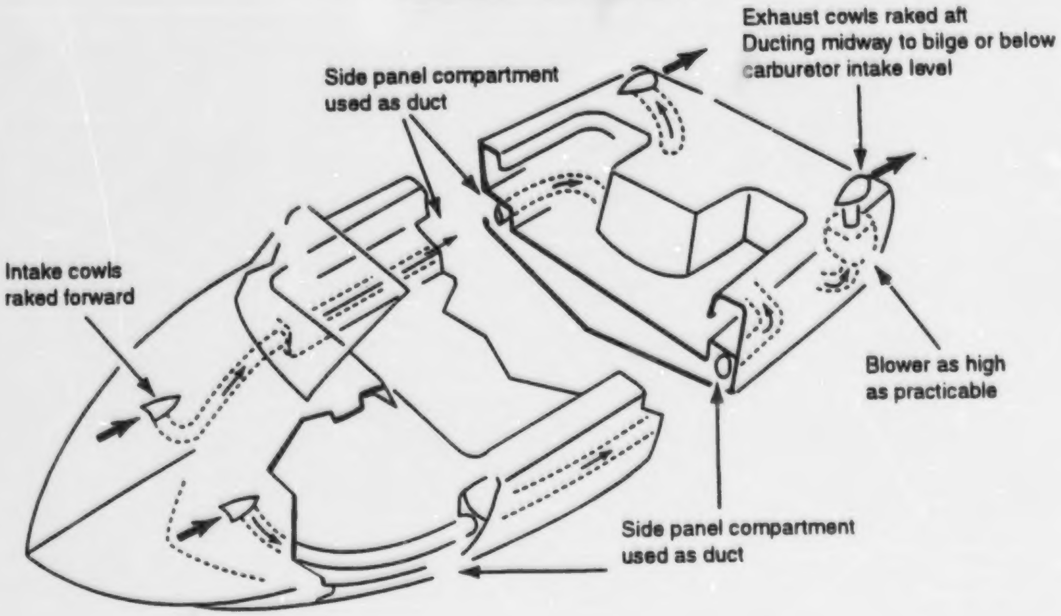

Sealed Flotation Bottom
At least 0.34 m^2 of open area per cubic metre of net compartment volume

Diagram 6-1

Closed Spaces

12. A separate ventilation system is required if an engine or fuel tank space conforms to the following:

(a) the space has less than 0.34 m^2 (3.5 ft^2) of area exposed to the atmosphere per m^3 (35 ft^3) of net space volume; or
(b) does not otherwise meet the requirements for an open space.



Closed Construction

Exhaust cowls raked aft
Ducting midway to bilge or below carburetor intake level
Side panel compartment used as duct
Intake cowls raked forward
Blower as high as practicable
Side panel compartment used as duct

Diagram 6-2

Underway Ventilation

13. Every closed engine space and every closed space containing a permanent or portable fuel tank shall be provided with a ventilation system designed to remove any accumulation of combustible vapours.

14. At least one intake duct shall introduce air midway to the bilge, or at least below the carburetor intake.

15. At least one exhaust duct shall extend down to the bilge of the space from which the fumes are to be expelled. If the space is an engine space, the exhaust duct entrances shall be located as nearly as practicable under the engine(s).

16. Duct termination in bilges shall be secured above the level of normal accumulations of bilge water.

17. Ventilation openings shall be located, where practicable, on the deck, but so located that no significant amount of water may enter, taking into account all normal service conditions of heel, trim, wave action, loading and reverse operations.

18. External openings of intake and exhaust shall be located and oriented to prevent entry of fuel vapours. In no instance shall the intakes and exhausts be closer than 380 mm (15 in) from the gasoline fill and tank vent fittings.

Ducts

19. The minimum aggregate internal cross-sectional area of ducts shall be calculated as per ABYC H-2.

20. If the engine or fuel tank space connects to an adjoining closed space, the total net volume of both the space and closed space shall be used to determine the required duct size.

21. Non-metallic materials used for ventilating ducts and components installed below deck shall be capable of continuous exposure to a temperature range of -30°C to 85°C without failure.

22. Non-metallic ventilating duct and components shall be installed at least 230 mm (9 in) horizontally from or below, or 460 mm (1 ft - 6 in) above, any surface capable of reaching a temperature of 150°C, unless those components are designed for use in higher temperature locations.

Cowls

23. Intake and exhaust ducts shall be fitted with cowls or their equivalent, so located that exhaust fumes and fuel vapours will not re-enter the space. In no instance shall the intakes or exhausts be closer than 380 mm (15 in) from the gasoline fill or vent fittings.

24. No component of the ventilation system shall restrict the minimum required duct size.

25. Cowl ventilators shall be rated and labeled with the maximum effective cross-sectional area.

26. The cowl manufacturer shall state the manner in which to install the cowl over the duct in order to maintain the rated area.

27. Screens under cowls normally reduce duct area and shall be accounted for by using oversize ducts and cowls.

28. If louvres are used as cowl equivalents, they shall create an air flow equivalent to that produced by the required minimum cowl size.

Blowers

29. The underway ventilation system shall be supplemented by a mechanical blower in order to remove combustible vapours from engine spaces prior to starting the engine.

30. Blowers may be installed with separate ducting or installed in the underway exhaust duct as illustrated in Diagram 6-2.

31. Blowers shall be mounted as high as practical, but at least 350 mm above the bilge low point, except for blowers designed in combination with bilge pumps which can be operated submerged.

32. Blower outlet fittings shall not have less effective area than blower intakes.

33. Blowers shall not be wired in the ignition circuit to run continuously, unless rated by the manufacturer for continuous operation.

34. Blower motors shall be of a sealed or arcless type suitable for marine atmosphere.

35. A Blower Instruction Placard shall be provided at every engine ignition switch indicating the length of blower operating time which is required to clear the engine space prior to starting the engine.

36. The blower operating time period shall not be less than 4 minutes.

37. The rating of blowers by their maximum volume per minute air flow, according to Table 6-1, shall be used to match blowers to engine spaces.

Table 6-1

Column 1	Column 2	Column 3
Net engine room volume (V) m^3	Rated blower capacity (Fr) m^3 per minute	Blower output (Fo) m^3 per minute
2.83 or less	Fr = 1.5 V	Fo = 0.6 V
Over 2.83	Fr = V/2 + 2.83	Fo = 0.2 V + 1.13

38. The rated blower capacity (Table 6-1, column 2) shall not be less than 1.4 m^3/min.

39. The blower output (Table 6-1, column 3) shall not be less than 0.5 m^3/min.

Engine and Fuel Tank Space Ventilation (Diesel)

Application

40. This subsection applies to all craft, regardless of length or accommodation, that have diesel engines for propulsion or other purposes.

General

41. Due to the characteristics of diesel fuel and the closed nature of the diesel engine fuel system, neither mechanical nor natural ventilation, is necessary to remove diesel fuel vapours.

42. Ventilating provisions and openings to the machinery space provided for the supply of combustion air shall accommodate the air requirements required by the engine manufacturer(s) for each propulsion and auxiliary engine in that space. These openings may also function as means of providing natural ventilation.

Battery Spaces

43. Spaces containing storage batteries shall provide for the escape of hydrogen.

Construction Standards for Small Vessels

Section 7: Fuel Systems

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Section 7: Fuel Systems

Application: Both pleasure craft and commercial vessels

Definitions

1. Accessible: Capable of being reached for inspection, or maintenance without removal of permanent craft structure.

2. Permanently installed: Securely fastened so that tools need to be used for removal.

3. Static floating position: Attitude in which craft floats in calm water, with each fuel tank filled to its rated capacity, but with no person or item of portable equipment on board, with other tanks such as water and holding tanks empty and permanently installed equipment supplied by the boat builder in its proper place.

Application

4. This Section applies equally to all gasoline (petroleum) or diesel fuel systems except as indicated.

General

5. A permanently installed fuel system shall provide maximum protection from leakage caused by corrosion, shock or fire.

6. All components of a fuel system, including tank penetrations and fittings, shall be accessible for inspection.

7. After installation, the fuel system which includes fill pipes, tanks, vent pipes, delivery pipes and return pipes, shall be hydrostatically pressure tested to a minimum of 21 kPa (3 lb/in^2).

8. The fuel system shall be designed and installed to contain at least 5% fuel expansion in order to minimize the risk of a fuel spill either into the boat or the environment when:

   (a) the fuel tank is filled to its rated capacity; and
   (b) the boat is in the static floating position.

9. Fuel systems shall be liquid and vapour tight to the hull interior.

   Exceptions:

   (a) Permeation of hoses within the limits of SAE J1527; and
   (b) Permeation of fuel tanks within the limits of United States Government CFR 33, Subpart K, 183.620 (a)(5)(i), and of ABYC H-2, Ventilation of Boats Using **GASOLINE**.

10. Fuel systems shall be capable of storage without operation at an ambient temperature range from -40° C to 80° C without failure or leakage, and operation at an ambient temperature range from -30° C to 80° C.

11. All electrically operated components installed in **GASOLINE** fuel systems shall be ignition-protected.

12. Drain plugs or valves on the filter(s) and tank(s) of **DIESEL** systems shall be of the type which cannot be opened inadvertently, or shall be installed in a manner to guard against inadvertent opening. Metal bowls are to be used for inboard gasoline engines and plastic bowls are to be used for outboard engines.

Fuel Tanks

13. Every fuel tank shall be constructed to meet the minimum test requirements for mechanical strength and fire resistance, as detailed in ABYC H-24 **GASOLINE** FUEL SYSTEMS, or ABYC H-33 **DIESEL** FUEL SYSTEMS, as applicable.

14. A fuel tank shall be constructed of materials in accordance with Table 7-1.

15. A fuel tank shall be constructed so that no external surface of the tank can retain moisture or spilled fuel.

16. A **GASOLINE** fuel tank shall have no openings in the bottom, sides or ends.

17. Clean-out plates shall not be installed in **GASOLINE** fuel tanks. Clean-out plates may be installed in the top or sides of **DIESEL** fuel tanks.

18. If baffles are provided, baffle openings shall be designed so that they do not prevent the fuel flow across the bottom or trap vapour across the top of the tank.

19. Threaded connections into fuel tanks shall be in accordance with American Standard Taper Pipe Thread (NPT).

20. Cellular plastic used to encase metallic fuel tanks shall not change volume by more than 5% or dissolve after being immersed for 24 hours at 29° C in each of the following liquids:

    (a) reference fuel B, in accordance with ASTM D-471
    (b) #2 reference oil, in accordance with ASTM D-471
    (c) a 5% solution of trisodium phosphate in water

Table 7-1

Fuel Tank Corrosion Resistance Requirements

Material	Specification	Minimum Nominal Sheet Thickness	Gauge	Welding Processes (1)
Nickel-Copper	ASTM - B127 Class A	0.79 mm	22 U.S. std	Resistance Seam. Inert Gas Shielded Arc Oxy-acetylene
Copper-Nickel	ASTM - B122	1.14 mm	17 A.W.G.	Inert Gas Shielded Arc Oxy-acetylene Resistance
Copper (2)	ASTM - B152 Type E.T.P.	1.45 mm	15 A.W.G.	Inert Gas Shielded Arc Carbon Arc Oxy-acetylene
Copper-Silicon	ASTM - B97 Types A, B & G	1.27 mm	16 A.W.G.	Inert Gas Shielded Arc Carbon Arc Oxy-acetylene Metal-Arc
Steel Sheet (3)	ASTM A93	1.90 mm	14 Mfrs.	Metal-Arc Oxy-acetylene Inert Gas Shielded Arc Resistance
Aluminized Steel (5)	ASTM A-463	1.21 mm	18 Mfrs.	Metal-Arc Oxy-acetylene Inert gas Shielded Arc Resistance
Aluminum (4)	Alloy 5052 or 5083 or 5086	2.29 mm	———	Inert Gas Shielded Arc Resistance
Stainless Steel (6)	316L	0.79 mm	22 U.S. std.	Metal-Arc Oxy-acetylene Inert Gas Shielded Arc Resistance

Notes:

(1) Tank seams produced by the welding processes listed shall be ductile and non-porous.

(2) Copper tanks shall be internally tin coated.

(3) Steel sheet tanks, when constructed for gasoline, shall be galvanized inside and outside by the hot dip process.

(4) Aluminum tank fitting plates shall be made of 5052, 5083, 5086, 6061 or 6063 aluminum or 300 series stainless steel.

(5) Aluminized steel tanks shall have a corrosion inhibiting baked paint or equivalent coating not less than 0.0381 mm thickness applied to the total tank exterior.

21. Cellular plastic used to encase metallic fuel tanks shall not absorb more than 0.58 kg (0.1 lb) of water per m^2 (ft^2) of cut surface.

22. Where plastic is bonded to a metallic tank, the adhesive strength of the bond shall exceed the cohesive strength of the plastic.

23. Non-polyurethane cellular plastic used to encase metallic fuel tanks shall have a minimum compressive strength of 410 kPa (60 lb/in^2) at a 10% deflection, measured in accordance with ASTM D-1622, Apparent Density of Rigid Cellular Plastics.

24. Polyurethane cellular plastic which is used to encase metallic fuel tanks shall have a minimum density of 50 kg/m^3 (3 lb/ft^3) measured in accordance with ASTM D-1622.

25. Rigid tubes and fill pipes which extend near the bottom of the tank shall have clearance to prevent contact with the bottom due to flexing of the tank.

26. Every fuel tank shall have permanently affixed to it a label showing as a minimum:

    (a) type of fuel(s) for which the tank is suitable;
    (b) the manufacturer's name, or logo, and address;
    (c) the month and the year of manufacture or the lot number and year of manufacture;
    (d) its capacity in litres (and optionally in gallons); and
    (e) the statement, "This tank meets the requirements of the Canadian Construction Standards for Small Vessels".

    Note: In lieu of the Standards quoted at (e) alternative equivalent standards will be accepted e.g. United States Government; CFR 33 183.510(a).

27. Every letter and numeral on the fuel tank(s) shall be:

    (a) at least 1.5 mm ($^1/_{16}$ in) in height and width; and
    (b) of a contrasting colour to the basic colour of the label.

28. Tank labels shall be readily visible and legible on the tank(s) as installed.

Fuel Tank Installation

29. Every fuel tank, including those encased in cellular plastic foam or fibre reinforced plastic, shall be so installed that all connections, accessories and labels are accessible for inspection and maintenance.

30. A **GASOLINE** fuel tank shall not be made integral with the hull. Further, no fuel tank shall support any deck, bulkhead or structural component or bear any extraneous load unless it is designed and built to do so.

31. Adequate supports shall be fitted as necessary to ensure structural integrity of tank(s).

32. A fuel tank shall be installed and restrained to provide as close to no movement as possible.

33. Metallic fuel tank supports and hold-downs shall be isolated from the tank surface by non-abrasive, non-absorbent, non-conductive materials.

34. Cellular plastic shall not be used as the sole support for a metal fuel tank.

35. Cellular plastic used as the sole support for a non-metallic fuel tank shall meet the requirements of ASTM D-1621 or ASTM D-1622

36. No cellular or fibre reinforced plastic fuel tank encasement shall permit water to:

    (a) collect between the plastic and the tank; or
    (b) be held against the tank by capillary action.

37. Metallic fuel tanks installed above a flat surface shall be separated from the surfaces by at least a 6 mm ($^1/_4$ in) air space when filled with fuel.

Gauges

38. Every fuel tank shall be installed with mechanical or remote reading fuel gauges, unless the tank installation permits sounding.

Fuel Tank Fill System

39. Fuel fill lines shall be hose or metal pipe.

40. Each fuel tank shall have an individual fill line.

41. Deck fill plates shall:

    (a) be located at least 380 mm (15 in) from any fresh air intake for gasoline systems;
    (b) not permit a fuel overflow to enter the boat;
    (c) shall be permanently marked GASOLINE, GAS, or the ISO symbol for gasoline in **GASOLINE** systems; and
    (d) shall be permanently marked DIESEL, or the ISO symbol for diesel in **DIESEL** systems.

42. Fuel shall not blow back through the fuel fitting when the tank is being refueled at a rate of 23 l per minute (6 U.S. gallons/min).

43. The fill pipe installation shall be self-draining, and lead directly from the deck fill to the tank in such a way as to prevent vapour locks.

44. The minimum inside diameter of the fill system shall be 32 mm (1 1/4 in).

Note: To maintain the minimum diameter, using standard fittings, the minimum hose ID will be 38 mm (1 1/2 in).

45. The hose in a fuel tank fill system shall be secured to the deck fill and the tank with corrosion resistant and galvanically compatible fittings consisting of:

(a) a swaged sleeve;
(b) a sleeve and threaded insert; or
(c) two metallic hose clamps of a type which is not dependent upon spring tension for compressive force.

46. Every hose clamp used in a tank fill system shall:

(a) be used with a hose which is designed for clamps;
(b) have a minimum nominal band width of 12 mm (1/2 in);
(c) fasten over the hose and the spud, pipe or hose fitting; and
(d) not be less than 12 mm (1/2 in) from the end of the hose.

47. Flexible fill piping shall be of neoprene fabric or wire reinforced neoprene material that:

(a) meets the requirements of SAE J1527 Jan 93 or UL 1114 April 87 type hose; and
(b) the fire resistance tests requirements of ABYC H-24 for **GASOLINE** fuel systems or the fire resistance tests requirements of ABYC H-33 for **DIESEL** fuel systems, as applicable.

48. Flexible fuel fill hose installed in engine compartments shall be USCG Type A1 or A2.

49. Hose shall not be installed on helical threading or knurling that provides a path for fuel leakage.

Fuel Tank Venting Systems

50. Every fuel tank shall have a venting system that:

(a) discharges fuel vapours overboard;
(b) does not allow a fuel overflow to enter the boat;
(c) minimizes the accidental entry of water; and
(d) prevents pressure in the tank from exceeding 80% of the rated pressure of the tank.

51. A flexible vent pipe shall be:

    (a) a minimum of 15 mm ($^{5}/_{8}$ in) I.D. and constructed of material(s) which conform to the performance requirements of ABYC H-24 and the fire resistance tests requirements of ABYC H-24 for **GASOLINE** fuel systems or the fire resistance tests requirements of ABYC H-33 for **DIESEL** fuel systems, as applicable;
    (b) installed so that it does not kink or sag; and
    (c) secured with corrosion resistant clamps of a type which is not dependent upon spring tension.

52. The vent shall be fitted with a flame arrestor which:

    (a) has an effective area not less than the minimum required for the vent line; and
    (b) can be cleaned, unless the vent itself is a flame arrestor.

53. Tank vent systems shall be self-draining and connect to the highest point of the fuel tank as installed in the boat under conditions of normal operation and normal trim.

Fuel Lines

54. All fuel lines, including fill, vent, delivery and return, shall be adequately protected from damage.

55. Every metallic fuel line connecting the fuel tank with the fuel inlet connection on the engine:

    (a) shall be made of seamless annealed copper, nickel-copper, or copper-nickel;
    (b) shall have a minimum wall thickness of 0.75 mm ($^{1}/_{32}$ in); and
    (c) and shall be galvanically protected from the structure in aluminum hulls.

56. A metallic fuel line shall be attached to the boat structure within 100 mm (4 in) of the connection of a flexible fuel line.

57. A section of flexible line with sufficient slack to absorb vibration shall be installed where a rigid fuel line terminates at:

    (a) an engine or fuel filter connection; and
    (b) a fuel tank that may vibrate.

58. Every hose in a fuel system shall meet or exceed:

    (a) the performance requirements of SAE J1527 or UL 1114; and
    (b) the fire resistance tests requirements of ABYC H-24 for **GASOLINE** fuel systems or the fire resistance tests requirements of ABYC H-33 for **DIESEL** fuel systems, as applicable.

59. Every hose shall be permanently marked, in capital letters and numerals at least 3 mm (0.12 in) in height and width and at intervals not greater than 300 mm (12 in), with the:

    (a) type of hose;
    (b) manufacturer's name or registered trademark; and
    (c) year of manufacture

    Hoses less than 300 mm (12 in) in length may be tagged with the required marking.

60. The inside diameter of a hose shall not exceed the minor outside diameter of the connecting spud, pipe, or fitting by more than the tolerance shown in Table 7-2.

Table 7-2

Minor Outside Diameter of the Fitting	Tolerance of Inside Diameter of Hose
Less than 9.5 mm (3/8 in.)	0.51 mm (0.020 in.)
9.5 mm to 25 mm (3/8 in. to 1 in.)	0.89 mm (0.035 in.)
Greater than 25 mm (1 in.)	1.65 mm (0.065 in.)

Anti-siphon Protection

61. All fuel distribution systems shall be provided with anti-siphon protection by at least one of the following:

(a) ensuring that no part of the line can, if separated at any point, fall below the level of the tank top;

(b) keeping all parts of fuel distribution and return lines above the level of the tank top from the tank to the carburetor inlet or its equivalent, e.g. throttle body, port fuel injection, or a location where fuel leakage cannot enter the boat when the boat is in its static floating position;

(c) fitting an anti-siphon demand valve at the tank top which can be opened only by the fuel pump suction to withdraw fuel from the tank and which will remain closed when the fuel pump is not operating, thereby preventing siphon action created by a break or leakage at any point in the fuel distribution system.

(d) installing an electrically operated valve at the tank withdrawal fitting, or along the line. When an electrically operated fuel stop valve is used it shall:

i) open only when the ignition switch is on;
ii) be capable of being operated manually; and
iii) meet the fire resistance tests requirements of ABYC H-24 for **GASOLINE** fuel systems or the fire resistance tests requirements of ABYC H-33 for **DIESEL** fuel systems, as applicable.

(e) installing a manual shut-off valve directly at the fuel tank connection, arranged to be readily accessible for operation from outside the compartment if the fuel tank top is located below the level of the carburetor inlet and the fuel line is rigid metal or USCG Type A1 hose.

Note: Readily accessible from outside, the compartment includes a shut-off valve installed at the tank close to, and directly below, an access port in the deck through which the valve can be operated.

62. If the length of fuel line from the tank outlet to the engine inlet is greater than 3600 mm (12 ft), a second manual shut-off valve shall be installed at the fuel inlet connection to the engine.

63. Fuel systems shall be equipped with an independently supported fuel strainer/filter complying with paragraphs 66-73 if a strainer/filter is not incorporated in the pick-up tube.

64. On vessels with multiple fuel tanks and a fuel system, such as fuel injection, that returns fuel to the tank, the system shall return unused fuel to the same tank from which it was drawn.

65. Information about the design, operation, and maintenance of this system shall be provided in the vessel owner's manual, and this information shall include a warning about the consequences of modifying this system that may result in a fuel overflow. See ABYC T-24, Owner's Manuals.

Fittings for Fuel Systems

66. Every fuel system fitting, joint and connection shall be accessible for inspection, maintenance and removal, without the removal of permanent boat structure.

67. Fuel lines shall have the minimum number of connections practicable.

68. Hose used in the fuel tank fill system shall be secured to pipes (smooth pipes acceptable), spuds or other fittings at each connection, by at least two metallic clamps with nominal band widths of at least 12 mm ($^1/_2$ in).

69. Every hose used in the fuel tank vent system or the fuel distribution and return line system shall be secured to a mating spud, pipe, or fitting that is formed or machined to provide serrations (at least 0.38 mm (0.15 in.) depth) or a bead. At least one corrosion resistant metallic clamp shall be used with a minimum nominal band width.

70. Every clip, strap and hose clamp, including fasteners:
    - (a) shall be made from a corrosion resistant material;
    - (b) shall not cut or abrade a fuel line; and
    - (c) shall not be separated by a tensile force of 5 N when tested under the fire resistance requirements for fuel systems as set forth in ABYC H-24 or H-33, as applicable.

71. Every hose clamp:
    - (a) shall be used with a hose which is designed for clamps;
    - (b) shall be at least one clamp width from the hose end;
    - (c) shall be fitted beyond the head or flare, or over the serrations of the mating spud, pipe or hose fitting; and
    - (d) shall not depend on spring tension for compressive force.

72. The minimum nominal band width of a hose clamp shall be determined by the outside diameter of the hose, as shown in Table 7-3.

Table 7-3

Outside Diameter of Hose	Clamp Width
Less than 11 mm ($^{7}/_{16}$ in)	6 mm ($^{1}/_{4}$ in)
11 mm to 20 mm ($^{7}/_{16}$ in to $^{25}/_{32}$ in)	8 mm ($^{3}/_{8}$ in)
Greater than 20 mm ($^{25}/_{32}$ in)	12.5 mm ($^{1}/_{2}$ in)

73. A fuel system shall not have a fitting for draining fuel other than a plug which is used to service the fuel filter or strainer. Such a plug:

(a) shall have a tapered pipe-thread; or
(b) shall be a screw type fitted with a locking device other than a split lock washer; or
(c) the plugs shall not create a galvanic cell with the housing that will accelerate corrosion.

Fuel Filters and Strainers

74. Every fuel filter or strainer shall meet the fire resistance requirements for fuel systems set forth in ABYC H-24.5.7, unless the filter or strainer is inside the fuel tank.

75. All fuel filters or strainers shall be supported on the engine or boat structure independent from the fuel line connections, unless the filter or strainer is inside the fuel tank.

76. Filters, separators and strainers shall meet the requirements of UL 1105, Marine Use Filters and Separators.

77. Fuel tank withdrawal pipes which are fitted with fuel filters:

(a) shall extend as close to the bottom of the tank as practical, to allow maximum drainage;
(b) shall permit water contamination to be withdrawn from the tank with the fuel; and
(c) shall be resistant to salt water, alcohol, and stale fuel.

Fuel Pumps

78. Every fuel pump shall be installed on the engine or within 300 mm (12 in) of the engine, with a maximum delivery hose length of 1220 mm (48 in) unless it is a fuel pump used to transfer fuel between tanks.

79. A diaphragm pump shall not leak fuel if the primary diaphragm fails.

80. Every electric fuel pump shall incorporate an automatic cut-off designed to eliminate fuel pressure at the outlet when the engine stops for any cause.

81. The outlet pressure of electrically operated fuel pumps shall be rated or controlled to the maximum carburetor fuel inlet pressure specified by the engine manufacturer.

    Exception: Electric fuel pumps used to transfer fuel between tanks.

82. A momentary type switch may override the automatic cut-off for the purpose of priming or starting the engine.

Grounding

83. Each metal or metallic plated component of the fuel fill system and fuel tank that is in contact with the fuel must be grounded so that its resistance to the boat ground is less than 1 ohm.

84. Wire ends shall not be clamped between the fill pipe and hose.

85. Static conductive neoprene tubing or piping which is used in lieu of metallic conductors shall be:

    (a) clearly marked as static conductive; and
    (b) installed in direct contact with non-painted attachment surfaces.

Carburetors (Gasoline)

86. Every carburetor, when tested to the requirements of the fire resistance test set forth in ABYC H-24, Appendix A, shall not leak more than 5 ml of fuel in 30 seconds when:

    (a) the float valve is open;
    (b) the carburetor is at half throttle; and
    (c) the engine is cranked without starting, or the fuel pump is delivering the maximum pressure specified by the manufacturer.

87. Every updraught and horizontal draught carburetor shall have a device which:

    (a) collects and holds fuel which flows out of the carburetor venturi section toward the air intake;
    (b) prevents collected fuel from being carried out of the carburetor assembly by the shock wave of a backfire or reverse air flow; and
    (c) returns the collected fuel to the engine induction system after the engine starts.

88. Every engine shall be equipped with an effective means of backfire flame control by the use of an effective flame arrestor.

89. Every inboard engine that uses a carburetor shall be so designed and fitted as to prevent gasoline from leaking into the bilges.

Valves

90. Valves shall pass the 2.5 minute fire test as specified in United States Government CFR 33, Section 183.590 and 24.5.7.

91. Electrically operated valves shall meet the requirements of UL429, Electrically Operated valves.

92. The unit shall incorporate means for independent mounting designed to relieve strain from connected fuel lines.

93. Manually operated valves shall be designed with positive stops in the open and closed positions, or shall indicate their opened and closed positions.

94. Electrically operated shut-off valves shall be connected to be energized to open when the engine ignition switch is on. A provision for manual operation shall be incorporated in the design.

95. Tapered plug valves with an external spring shall not be used.

Fuel System Labeling

96. A warning label shall be placed in a readily visible location on the boat, or at a point of frequent servicing of the boat.

97. The label shall comply with ABYC T-5, Safety, Signs and Labels, and shall contain at least the following informational elements:

    (a) the hazard intensity signal word;
    (b) nature of the hazard;
    (c) consequences that can result if the instructions to avoid the hazard are not followed; and
    (d) instructions on how to avoid the hazard.

    Note: An example of such a label follows:

WARNING

AVOID SERIOUS INJURY OR DEATH
FROM FIRE OR EXPLOSION
RESULTING FROM LEAKING FUEL.
INSPECT SYSTEM FOR LEAKS AT
LEAST ONCE A YEAR.

98. Each valve in the fuel system shall be clearly marked with its function and what each position means.

Outboard Motor Installations

99. The following additional requirements apply to all outboard installations.

100. All fuel lines in outboard motor boats shall terminate adjacent to the transom motor cut-out so that: any leakage will not enter the boat.

101. Quick disconnect fittings used between fuel distribution lines and outboard motors shall automatically shut off fuel flow when disconnected.

102. No pressurized tanks shall be built into or permanently attached to hulls.

Construction Standards for Small Vessels

Section 8: Electrical Systems

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Section 8: Electrical Systems

Application: **Both pleasure craft and commercial vessels**

DC Electrical Systems

Definitions

1. An electrical component means electrical equipment such as, but not limited to, conductors, resistors, motors, generators, alternators, distributors, resistors, appliances, and electrical control devices.

2. Ignition Protection is defined as the design and construction of a device such that under design operating conditions it will not ignite a flammable hydrocarbon mixture surrounding the device when an ignition source causes an internal explosion, or it is incapable of releasing sufficient electrical or thermal energy to ignite a hydrocarbon mixture, or the source of ignition is hermetically sealed.

Application

3. This part applies to all craft that have gasoline or diesel engines for propulsion or electrical generating power, and/or LPG or CNG equipment on board.

General

4. Switches and controls shall be marked to indicate their usage, unless the purpose of the switch is obvious and operation of the switch could not, under normal operating conditions cause a hazardous condition.

Ignition Protection

5. Every electrical component shall be ignition protected unless the component is isolated from the fuel source such as engines, stoves, valves, connections or other fittings on vent lines, fill lines, distribution lines or fuel tanks.

Exceptions: a) **boats using diesel fuel as the only fuel source;**

b) **electrical devices in accommodation spaces and/or open compartments having at least 70 cm^2 (15 in^2) of open area per m^3 (ft^3) of net compartment volume exposed to the atmosphere outside of the craft.**

6. Isolation of an electrical component from a fuel source may be provided by:

   (a) a bulkhead which meets the requirements of paragraph 7 and which is located between the electrical component and the fuel source;
   (b) the installation of the electrical component with provision of a means to prevent fuel and fuel vapours from becoming exposed to the electrical component; or
   (c) a space which is open to the atmosphere and which provides at least 600 mm (2 ft - 0 in) between the fuel source and the electrical component.

7. A bulkhead as detailed in paragraph 6 (a) shall:

   (a) extend both vertically and horizontally at least the distance of the open space between the fuel source and the ignition source;
   (b) resist a water level which is 300 mm (1 ft - 0 in) high or one third the maximum height of the bulkhead, whichever is less, without seepage of more than 7.5 ml of fresh water per hour; and
   (c) have no opening located higher than 300 mm (1 ft - 0 in) or one third the maximum height of the bulkhead, whichever is less, unless:
      i) the opening is used for the passage of conductors, piping, ventilation ducts, mechanical equipment, or doors, hatches and access panels, and
      ii) the maximum annular space around each item or door, hatch or access panel is not larger than 6 mm ($^1/_4$ in).

Grounding

8. Where a boat has more than one gasoline engine, grounded cranking motor circuits shall be connected to each other by a common conductor circuit which can carry the starting current of each of the grounded cranking motor circuits.

Batteries

9. Batteries shall be installed in a dry, ventilated location above bilge water level.

10. Batteries as installed in the craft shall be capable of inclinations of up to 45° without leakage of electrolyte. Means shall be provided for containment of any spilled electrolyte.

11. Batteries, as installed, shall be protected against mechanical damage by their location or enclosure.

12. Every battery as installed shall not move more than 25 mm (1 in) when a pulling force of twice the battery weight is applied through the centre of gravity in each of the following five directions for one minute:

   (a) vertically;
   (b) horizontally, fore and aft; and
   (c) horizontally port and starboard.

13. No battery shall be installed directly above or below a fuel tank, fuel filter, or fuel line fitting.

14. Every metallic fuel line and fuel system component located within 300 mm (12 in) above the level of the top of an installed battery shall be shielded with dielectric material.

15. No battery shall be installed such that metallic objects can come in contact with the ungrounded battery terminals.

16. Means for adequate ventilation shall be provided to prevent the accumulation of hydrogen from the battery during charging or discharging cycles. Vented batteries shall not be installed in accommodation spaces.

17. The positive terminal of a battery shall be identified on the terminal or on the battery case near the terminal, with one of the following symbols:

    (a) "POS";
    (b) "P"; or
    (c) "+".

18. No battery terminal connector shall depend upon spring tension for its connection to the terminal.

Battery Disconnect Switch

19. A battery disconnect switch shall be installed in the positive conductor from each battery or group of batteries, with a cold cranking average rating greater than 800 amperes.

    Exception: Conductors supplying:

    (a) Electronic equipment with continuously powered memory;
    (b) Safety equipment such as bilge pumps, alarms, CO detectors and bilge blowers;
    (c) Battery charging equipment.

    (Exemptions: Boats less than 8.0 m (26 ft) are exempted.)

20. Battery switches shall be placed in a readily accessible location as close as practicable to the battery(s).

21. Battery disconnect switches shall be capable of carrying the maximum current of the system including the intermittent load of the starter motor circuit.

22. Remote controlled battery disconnect switches, if used, shall also permit safe manual operation at the switch.

Conductors – General

23. This subsection does not apply to communications systems, electronic navigation equipment, resistance conductors which control circuit amperage, high voltage ignition systems, conductors and terminations, pigtails of less than 200 mm (8 in) of exposed length, and cranking motor conductors.

24. Every conductor shall be insulated, stranded copper.

25. Except for intermittent surges, no conductor shall carry a current greater than that specified in Table 8-1 for the conductors gauge and temperature rating.

26. In circuits where voltage drop must be kept to a minimum (e.g. bilge blowers, navigation lights, electronic equipment) conductors shall be sized for a voltage drop not to exceed 3% (see Table 8-2).

27. In circuits where voltage drop is not critical, conductors shall be sized for a voltage drop not to exceed 10% (see Table 8-3).

Colour Coding

28. The colour coding shown in Table 8-4 identifies colours for DC conductors used for general wiring purposes on boats.

29. Colour coding of engine and accessory wiring shall be identified in a wiring diagram of the system indicating the method of identification. The wiring diagram shall be provided with the boat.

Table 8-1: Allowable amperage of conductors

Conductor Size		Temperature rating of conductor insulation						
(Circular Mils)	(AWG)	60°C	75°C	80°C	90°C	105°C	125°C	200°C
1620	18	10	10	15	20	20	25	25
2580	16	15	15	20	25	25	30	35
4110	14	20	20	25	30	35	40	45
6530	12	25	25	35	40	45	50	55
10400	10	40	40	50	55	60	70	70
16500	8	55	65	70	70	80	90	100
26300	6	80	95	100	100	120	125	135
41700	4	105	125	130	135	160	170	180
52600	3	120	145	150	155	180	195	210
66400	2	140	170	175	180	210	225	240
83700	1	165	195	210	210	245	265	280
106000	0	195	230	245	245	285	305	325
133000	00	225	265	285	285	330	355	370
168000	000	260	310	330	330	385	410	430
212000	0000	300	360	385	385	445	475	510

Correction Factors

Note 1.	60°C	75°C	80°C	90°C	105°C	125°C	200°C
Temperature rating of conductor	0.58	0.75	0.78	0.82	0.85	0.89	1.00

Note 2.

Number of current carrying conductors:	Correction Factor
3	0.70
4 to 6	0.60
7 to 24	0.50
25 and above	0.40

Table 8-2: Conductor Sizes for 3% Drop in Voltage

Length of Conductor from Source of Current to Device and Back to Source - Feet

Metres	3	45	6	8	9	12	15	18	20	25	27	30	33	36	40	43	45	48	52
(Feet)	(10)	(15)	(20)	(25)	(30)	(40)	(50)	(60)	(70)	(80)	(90)	(100)	(110)	(120)	(130)	(140)	(150)	(160)	(170)
Total Current On Circuit in Amps.	12 Volts - 3% Drop Wire Sizes (gage) - Based on Minimum CM area																		
5	18	16	14	12	12	10	10	10	8	8	8	6	6	6	6	6	6	6	6
10	14	12	10	10	10	8	6	6	6	6	4	4	4	4	2	2	2	2	2
15	12	10	10	8	8	6	6	6	4	4	2	2	2	2	2	1	1	1	1
20	10	10	8	6	6	6	4	4	2	2	2	2	1	1	1	0	0	0	2/0
25	10	8	6	6	6	4	4	2	2	2	1	1	0	0	0	2/0	2/0	2/0	3/0
30	10	8	6	6	4	4	2	2	1	1	0	0	0	2/0	2/0	3/0	3/0	3/0	3/0
40	8	6	6	4	4	2	2	1	0	0	2/0	2/0	3/0	3/0	3/0	4/0	4/0	4/0	4/0
50	6	6	4	4	2	2	1	0	2/0	2/0	3/0	3/0	4/0	4/0	4/0				
60	6	4	4	2	2	1	0	2/0	3/0	3/0	4/0	4/0	4/0						
70	6	4	2	2	1	0	2/0	3/0	3/0	4/0	4/0								
80	6	4	2	2	1	0	3/0	3/0	4/0	4/0									
90	4	2	2	1	0	2/0	3/0	4/0	4/0										
100	4	2	2	1	0	2/0	3/0	4/0											
	24 Volts – 3% Drop Wire Sizes (gage) - Based on Minimum CM area																		
5	18	18	18	16	16	14	12	12	12	10	10	10	10	10	8	8	8	8	8
10	18	16	14	12	12	10	10	10	8	8	8	6	6	6	6	6	6	6	6
15	16	14	12	12	10	10	8	8	6	6	6	6	6	4	4	4	4	4	2
20	14	12	10	10	10	8	6	6	6	6	4	4	4	4	2	2	2	2	2
25	12	12	10	10	8	6	6	6	4	4	4	4	2	2	2	2	2	2	1
30	12	10	10	8	8	6	6	4	4	4	2	2	2	2	2	1	1	1	1
40	10	10	8	6	6	6	4	4	2	2	2	2	1	1	1	0	0	0	2/0
50	10	8	6	6	6	4	4	2	2	2	1	1	0	0	0	2/0	2/0	2/0	3/0
60	10	8	6	6	4	4	2	2	1	1	0	0	0	2/0	2/0	3/0	3/0	3/0	3/0
70	8	6	6	4	4	2	2	1	1	0	0	2/0	2/0	3/0	3/0	3/0	3/0	4/0	4/0
80	8	6	6	4	4	2	2	1	0	0	2/0	2/0	3/0	3/0	3/0	4/0	4/0	4/0	4/0
90	8	6	4	4	2	2	1	0	0	2/0	2/0	3/0	3/0	4/0	4/0	4/0	4/0	4/0	
100	6	6	4	4	2	2	1	0	2/0	2/0	3/0	3/0	4/0	4/0	4/0				
	32 Volts – 3% Drop Wire Sizes (gage) - Based on Minimum CM area																		
5	18	18	18	18	16	16	14	14	12	12	12	12	10	10	10	10	10	10	8
10	18	16	16	14	14	12	12	10	10	10	8	8	8	8	8	6	6	6	6
15	16	14	14	12	12	10	10	8	8	8	6	6	6	6	6	6	6	4	4
20	16	14	12	12	10	10	8	8	6	6	6	6	6	4	4	4	4	4	2
25	14	12	12	10	10	8	8	6	6	6	6	4	4	4	4	2	2	2	2
30	14	12	10	10	8	8	6	6	6	4	4	4	4	2	2	2	1	1	1
40	12	10	10	8	8	6	6	4	4	4	2	2	2	2	2	1	1	1	1
50	12	10	8	8	6	6	4	4	2	2	2	2	2	1	1	0	0	0	0
60	10	8	8	6	6	4	4	2	2	2	2	1	1	0	0	0	2/0	2/0	2/0
70	10	8	6	6	6	4	2	2	2	1	1	0	0	0	2/0	2/0	2/0	3/0	3/0
80	10	8	6	6	4	4	2	2	1	1	0	0	0	2/0	2/0	3/0	3/0	3/0	3/0
90	8	6	6	6	4	2	2	2	1	0	0	2/0	2/0	2/0	3/0	3/0	3/0	4/0	4/0
100	8	6	6	4	4	2	2	1	0	0	2/0	2/0	2/0	3/0	3/0	3/0	4/0	4/0	4/0

Table 8-3: Conductor Sizes for 10% Drop in Voltage

Length of Conductor from Source of Current to Device and Back to Source - Feet

Metres	3	45	6	8	9	12	15	18	20	25	27	30	33	36	40	43	45	48	52
(Feet)	(10)	(15)	(20)	(25)	(30)	(40)	(50)	(60)	(70)	(80)	(90)	(100)	(110)	(120)	(130)	(140)	(150)	(160)	(170)
Total Current On Circuit in Amps.	12 Volts - 10% Drop Wire Sizes (gage) - Based on Minimum CM area																		
5	18	18	18	18	18	16	16	14	14	14	12	12	12	12	12	10	10	10	10
10	18	18	16	16	14	14	12	12	10	10	10	10	8	8	8	8	8	8	6
15	18	16	14	14	12	12	10	10	8	8	8	8	8	6	6	6	6	6	6
20	16	14	14	12	12	10	10	8	8	8	6	6	6	6	6	6	4	4	4
25	16	14	12	12	10	10	8	8	6	6	6	6	6	4	4	4	4	4	2
30	14	12	12	10	10	8	8	6	6	6	6	4	4	4	4	2	2	2	2
40	14	12	10	10	8	8	6	6	6	4	4	4	2	2	2	2	2	2	2
50	12	10	10	8	8	6	6	4	4	4	2	2	2	2	2	1	1	1	1
60	12	10	8	8	6	6	4	4	2	2	2	2	2	1	1	1	0	0	0
70	10	8	8	6	6	6	4	2	2	2	2	1	1	1	0	0	0	2/0	2/0
80	10	8	8	6	6	4	4	2	2	2	1	1	0	0	0	2/0	2/0	2/0	2/0
90	10	8	6	6	6	4	2	2	2	1	1	0	0	0	2/0	2/0	2/0	3/0	3/0
100	10	8	6	6	4	4	2	2	1	1	0	0	0	2/0	2/0	2/0	3/0	3/0	3/0
	24 Volts - 10% Drop Wire Sizes (gage) - Based on Minimum CM area																		
5	18	18	18	18	18	18	18	18	16	16	16	16	14	14	14	14	14	14	12
10	18	18	18	18	18	16	16	14	14	14	12	12	12	12	12	10	10	10	10
15	18	18	18	16	16	14	14	12	12	12	10	10	10	10	10	8	8	8	8
20	18	18	16	16	14	14	12	12	10	10	10	10	8	8	8	8	8	8	6
25	18	16	16	14	14	12	12	10	10	10	8	8	8	8	8	6	6	6	6
30	18	16	14	14	12	12	10	10	8	8	8	8	8	6	6	6	6	6	6
40	16	14	14	12	12	10	10	8	8	8	6	6	6	6	6	6	4	4	4
50	16	14	12	12	10	10	8	8	6	6	6	6	6	4	4	4	4	4	2
60	14	12	12	10	10	8	8	6	6	6	6	4	4	4	4	2	2	2	2
70	14	12	10	10	8	8	6	6	6	6	4	4	4	2	2	2	2	2	2
80	14	12	10	10	8	8	6	6	6	4	4	4	2	2	2	2	2	2	2
90	12	10	10	8	8	6	6	6	4	4	4	2	2	2	2	2	2	1	1
100	12	10	10	8	8	6	6	4	4	4	2	2	2	2	2	1	1	1	1
	32 Volts - 10% Drop Wire Sizes (gage) - Based on Minimum CM area																		
5	18	18	18	18	18	18	18	18	18	18	18	16	16	16	16	14	14	14	14
10	18	18	18	18	18	18	16	16	14	14	14	14	14	12	12	12	12	12	12
15	18	18	18	18	18	16	14	14	14	12	12	12	12	10	10	10	10	10	10
20	18	18	18	16	16	14	14	12	12	12	10	10	10	10	10	8	8	8	8
25	18	18	16	16	14	14	12	12	10	10	10	10	10	8	8	8	8	8	8
30	18	18	16	14	14	12	12	10	10	10	10	8	8	8	8	8	6	6	6
40	18	16	14	14	12	12	10	10	8	8	8	8	8	6	6	6	6	6	6
50	16	14	14	12	12	10	10	8	8	8	6	6	6	6	6	6	6	4	4
60	16	14	12	12	10	10	8	8	8	6	6	6	6	6	6	4	4	4	4
70	14	14	12	10	10	8	8	8	6	6	6	6	6	4	4	4	4	2	2
80	14	12	12	10	10	8	8	6	6	6	6	4	4	4	4	2	2	2	2
90	14	12	10	10	10	8	6	6	6	6	4	4	4	4	2	2	2	2	2
100	14	12	10	10	8	8	6	6	6	4	4	4	4	2	2	2	2	2	2

Table 8-4: General Wiring Colour Code

Colour	Use
Green, or green w/yellow stripe(s)	DC Grounding Conductors
Black, or Yellow	DC Negative Conductors
Red	DC Positive Conductors

Engine and Accessory Wiring Colour Code

Colour	Item	Use
Yellow w/red strip (YR)	Starting circuit	Starting switch to solenoid
Brown/yellow stripe (BY) or Yellow (Y) - see note	Bilge blowers	Fuse or switch to blowers
Dark Gray (Gy)	Navigation lights	Fuse or switch to lights
	Tachometer	Tachometer sender to gauge
Brown (Br)	Generator armature	Generator armature to regulator
	Alternator charge light	Generator Terminal/alternator Auxiliary terminal to light to regulator
	Pumps	Fuse or switch to pumps
Orange (O)	Accessory feed	Ammeter to alternator or generator output and accessory fuses or switches. Distribution panel to accessory switch.
Purple (Pu)	Ignition	Ignition switch to coil and electrical instruments.
	Instrument feed	Distribution panel to electric instruments.
Dark blue	Cabin and instrument lights	Fuse or switch to lights
Light blue (Lt Bl)	Oil pressure	Oil pressure sender to gauge
Tan	Water temperature	Water temperature sender to gauge
Pink (Pk)	Fuel gauge	Fuel gauge sender to gauge
Green/stripe (G/x) Except G/Y	Tilt down and/or trim in	Tilt and/or trim circuits
Blue/stripe (Bl/x)	Tilt up and/or trim out	Tilt and/or trim circuits

Note: If yellow is used for DC negative, blower must be brown with yellow stripe.

Conductors in Circuits Less Than 50 Volts

30. This subsection does not apply to communication systems, electronic navigation equipment, resistance conductors which control circuit amperage, and pigtails of less than 200 mm (8 in) exposed length.

31. Every conductor in a circuit which has a nominal voltage of less than 50 volts shall conform to the requirements of paragraph 33 of this section.

Conductors in Circuits of 50 Volts or More

32. This subsection does not apply to communication systems, electronic navigation equipment, resistance conductors which control circuit amperage, conductors in secondary circuits of ignition systems, and pigtails of less than 200 mm (8 in) of exposed length.

33. Every permanently installed conductor in a circuit which has a nominal voltage of 50 volts or more shall be:

    (a) covered with insulation classified as moisture resistant and flame retardant in the latest edition of the Canadian Electrical code Part I or a recognized testing laboratory with list of approval lab;
    (b) a conductor which conforms to IEEE Standard 45-1977;
    (c) a conductor listed for marine use by an independent testing laboratory which provides listing, labeling, and follow-up service;
    (d) a conductor which conforms to the mechanical water absorption and flame retardant standards of UL Standard 83; or
    (e) of an oil resistant type when installed in engine spaces and bilge water areas.

34. Portable/flexible cords shall not be used for permanent wiring. Where a flexible cord is used for portable equipment it shall be of a type SO, ST, SJOW, or SJTW as listed in the Canadian Electrical Code Part 1 or a nationally approved equal alternative.

35. Where the nominal circuit voltage of each of three or more current carrying conductors in a duct, bundle or cable is 50 volts or more, the amperages of each of those conductors shall not exceed that listed in Table 8-1 multiplied by the correction factor in note 2 of Table 8-1 for the applicable number of conductors.

Secondary Circuits of Ignition Systems

36. Every conductor in a secondary circuit of an ignition system shall conform to SAE Standard J557.

37. The connection of every ignition conductor to a sparking plug, coil or distributor shall have a tight fitting cap, boot or nipple.

Conductors – Support and Protection

38. This subsection does not apply to communication systems, electronic navigation equipment, or high voltage secondary conductors and termination in ignition systems.

39. Except for the first 1000 mm (3 ft - 3 in) of a conductor leading from a battery terminal, every conductor or group of conductors shall be supported by clamps or straps at intervals not greater than 500 mm unless the conductor or group of conductors is enclosed in a rigid duct or conduit.

40. Clamps, straps, ducts or conduits shall be designed to prevent chafing or damage to the conductor insulation.

41. Provision shall be made to avoid stress being placed on any conductor that connects two components that can move in relation to each other.

42. Every conductor or group of conductors which passes through a bulkhead, structural member, junction box, or other rigid surface shall be protected from abrasion.

43. Every conductor shall be protected from damage due to exposure to heat sources capable of damaging the insulation.

44. Current carrying conductors shall be routed as high as practical above the bilge water level and other areas where water may accumulate. If conductors must be routed in the bilge or other areas where water may accumulate, the wiring and connections shall be watertight.

45. AC and DC conductors or multiconductors shall be separately sheathed in conduit, cable trunking, bundled or otherwise kept separate from each other.

46. Each conductor that is part of the electrical system, except for conductors integral with engines as supplied by their manufacturers, shall be clearly differentiated between AC and DC and identified as to its function in the system.

47. DC equipotential bonding conductors shall be identified by green or green with yellow stripe insulation, which colours shall not be used for current carrying conductors, or may be uninsulated.

Conductors – Termination

48. This subsection does not apply to communications systems and electronic navigation equipment.

49. Every connection to a screw terminal or stud which is outside a junction box or enclosure shall be connected by a closed-ring connector, eyelet connector, captive spade connector, mechanical locking connector or spring locking connector.

50. Every stripped connector that is connected to a compression screw terminal which is outside a junction box or enclosure shall be mechanically secured to avoid stress on the connection.

51. Every single friction connection, spring type connector, and multi-connector plug which is outside a junction box or enclosure shall be capable of withstanding a force of 27 N for one minute, applied along the axial direction of the conductor.

52. Subject to paragraph 43, a soldered connection that is outside a junction box or enclosure shall not be the sole means of connection between two or more conductors, or between a conductor and connector.

53. Notwithstanding paragraph 42, a conductor may be soldered to a connector which joins the conductor to a battery terminal or stud, provided that the length of the soldered joint is at least 1.5 times the diameter of the stranded portion of the battery conductor.

54. Every connection that is outside of a junction box or enclosure shall withstand, for one minute, the force specified in Table 8-5 for the smallest conductor size in the connection.

Table 8-5: Tensile Test Values for Connections

Conductor Size		Tensile Force	
Circ. mils	AWG	Newtons	Pounds
1620	18	45	10
2580	16	65	15
4110	14	130	30
6530	12	155	35
10400	10	175	40
16500	8	200	45
26300	6	220	50
33100	5	265	60
41700	4	310	70
52600	3	355	80
66400	2	400	90
83700	1	445	100
106000	0	555	125
133000	00	665	150
168000	000	775	175
212000	0000	1000	225

55. Every ungrounded terminal or stud which is continuously energized:

(a) shall comply with paragraphs 36 and 37 of this Section; or
(b) shall have a boot, nipple, cap, cover, or shield which prevents accidental short-circuiting at the terminals or studs.

56. Every termination which is composed of an ungrounded current carrying conductor, terminal fitting, and connector shall be protected from accidental short-circuiting with:

(a) another termination from another circuit which is composed of an ungrounded current carrying conductor, terminal fitting, and connector; or
(b) any metal which is grounded.

57. No conductor shall be joined to another conductor by a wire nut, or wire screw.

58. Blade type friction connectors may be used if:

(a) the voltage drop from terminal to terminal does not exceed 50 millivolts for a 20 amp current flow; and
(b) The connection does not separate if subjected to a 27 N tensile force along the axial direction of the connector for one minute.

59. All connections shall be in locations protected from the weather or in weathertight enclosures. Connections exposed to immersion shall be in watertight enclosures.

60. Metals used for terminal studs, nuts and washers shall be corrosion resistant and galvanically compatible with the conductor and terminal. Aluminum and unplated steel shall not be used for studs, nuts or washers in electrical circuits.

Receptacles

61. Receptacles and matching plugs used on DC systems shall not be interchangeable with those used on AC systems on the craft.

62. Receptacles installed in locations subject to rain, spray or splash shall be protected by a cover with an effective weatherproof seal.

63. Receptacles installed in areas subject to flooding or immersion shall be protected by an effective cover with a watertight seal, including connecting plugs.

Overcurrent Protection – Gereral

64. This section does not apply to resistance conductors which control circuit amperage, conductors in secondary circuits of ignition systems, pigtails of less than 200 mm (8 in.) of exposed length, and power supply conductors in cranking motor circuits.

65. Every ungrounded, current carrying conductor shall be protected by a manually reset, tripfree circuit breaker or fuse which shall be:

    (a) at the source of power for each conductor; or
    (b) at the point where a conductor size is reduced to a smaller gauge; or
    (c) at the origin of the circuit, if the circuit breaker or fuse has a current rating which prevents overloading of the smallest conductor in the circuit.

66. Except as provided in paragraph 67 the current rating of each circuit breaker or fuse shall not exceed the current rating of the smallest conductor in the circuit.

67. If the value specified in paragraph 66 does not correspond to a standard circuit breaker or fuse rating, then the next larger rated circuit breaker or fuse may be used, provided it does not exceed 150% of the allowed current capacity of the conductor.

68. The voltage rating of each circuit breaker or fuse shall not be less than the nominal voltage of the circuit which it protects.

Overcurrent Protection – Special Applications

69. Every ungrounded supply conductor from a storage battery shall have a manually reset, tripfree circuit breaker or fuse, unless the supply conductor is in the main power feed circuit from the battery to an engine cranking motor.

70. The circuit breaker or fuse as specified in paragraph 69 shall be within 1800 mm (6 ft) of the battery as measured along the conductor, unless the circuit has a switch which disconnects the battery.

Panel Boards

71. The front side of panel boards (i.e. switch and breaker operating face) shall be readily accessible, and the rear side (i.e. terminal and connection side) shall be accessible.

72. Panel boards shall be designed, constructed and installed so that there are no exposed live parts accessible to the operator in the normal operating position.

73. Panel boards shall be weatherproof or protected from weather and splash.

74. Craft equipped with both DC and AC electrical systems shall have their distribution from either separate panel boards or a common one with a partition or other positive means provided to clearly separate the AC and DC sections from each other. Wiring diagrams to identify circuits, components and conductors shall be included.

The Following Requirements Apply to Commercial Vessels Only:

Cables and Connectors

75. All cables shall have stranded copper conductors, a protective covering of either watertight metallic sheath or impervious nonmetallic sheath, compatible with the insulation and be rated for at least 75°C service.

76. Every conductor in a circuit which has a nominal voltage of 50 volts or more shall:

    (a) be in accordance with *Transport Canada Marine Electrical Standards TP127, Section 12*;
    (b) not be used for fixed wiring if they are portable cords or portable cables;
    (c) be a conductor which conforms to IEEE Standard 45; and
    (d) be a conductor listed for marine use by an independent testing laboratory which provides listing, labeling, and follow-up service.

Electrical Systems of 50 Volts or Over

77. Permanently installed, electrical systems of 50 volts or over shall conform to *Transport Canada Marine Electrical Standards, TP 127 or ABYC.*

78. All connections should be made in terminal or junction boxes providing mechanical and environmental protection.

Equipment Grounding

79. In steel and aluminum vessels, non-conducting exposed metal parts of electrical equipment that requires grounding shall be effectively grounded to the hull.

80. On wood, fibre-reinforced plastic and composite vessels, a continuous ground conductor shall be installed to facilitate the grounding of non-conducting exposed metal parts of electrical, electronic and communication equipment that requires grounding. The ground conductor shall terminate at a point on the main engine or at a copper plate of area not less than 0.2 m^2 fixed to the keel below the light waterline so as to be fully immersed under all conditions of heel.

81. Every grounding conductor shall be of copper or other corrosion-resistant material and shall be securely installed and protected, where necessary, against damage and electrolytic corrosion.

82. Every ground connection to the vessel's structure, or on wood, fibre-reinforced plastic and composite vessels, to the continuous ground conductor, shall be made in an accessible position and shall be secured by a screw or connector of brass or other corrosion-resistant material used solely for that purpose.

Construction Standards for Small Vessels

Section 9: Machinery Systems

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DATED:	**1ST April 1999**
NUMBER OF PAGES:	**6**

THIS ISSUE SUPERSEDES:

Issue number:	0
Dated:	0
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Section 9: Machinery Systems

Application: **Commercial Vessels Only**

Engine Starting

1. The machinery may have either mechanical, hand or electric starting.

2. Charging facilities for the batteries should be automatic. Where there are two motors and an auxiliary battery, it is recommended that the two starter motor batteries be capable of being connected in parallel to provide additional starting power.

Gasoline Engines

3. In enclosed machinery spaces where gasoline is present there should be power ventilation which, prior to starting the engine, should be operated for an adequate length of time to clear the space(s) of vapours, with the minimum time of ventilation being 4 minutes. A clear permanent instruction placard covering this operation should be mounted at the ignition switch on the control console.

Operating Station Controls

4. The following shall be provided at the vessel's operating station, where applicable:

   (a) Engine oil pressure and engine coolant temperature indicators for inboard engine
   (b) Fuel capacity gauges unless other adequate means to determine the amount of fuel is provided
   (c) Battery charging gauges
   (d) Controls for navigation light, steering equipment, etc.
   (e) Control and instructions for the blowers
   (f) High bilge indicator
   (g) Fire detection panel and alarms

Shafting and Propellers

5. The propulsion machinery manufacturer's recommendations, or other recognized authority criteria, should be taken into account when determining the material and dimensions of shafting and propellers.

Pressure Vessels

6. Where there are pressure vessels they should be fitted with a drain valve, pressure gauge and safety valve and should conform to recognized rules, except:

   (a) one having a working pressure that does not exceed 103 kpa (15 lb/in^2);
   (b) one having an internal diameter that does not exceed 150 mm (6 in);
   (c) one where the volume above the normal working level of a liquid does not exceed 45 l (12 gallons U.S.); or
   (d) one where the volume does not exceed 150 l (40 gallons U.S.) and the maximum working pressure does not exceed 700 kpa (100 lb/in^2).

Bilge Pumping Arrangements

7. There should be a means of pumping or bailing each watertight compartment when the vessel is in its operating condition. The means provided should be effective when the vessel is upright and when it is heeling up to an angle of 10°.

8. Vessels over 6 m (20 ft) should have at least one automatic bilge pump of 0.91 l/sec (0.25 gallons U.S./sec) minimum capacity.

Where a Piping System is Fitted

9. The piping arrangement should ensure that no back siphoning can occur and suitable strainers should be provided on the suction line from each compartment.

10. The piping may be of metal, rigid plastic or non-collapsible and non-oil degradable rubber hose with flanged, screwed or robust double-clamped connections, where possible.

11. The piping should normally be not less than 25 mm (1 in) in diameter, except that for small compartments 18 mm ($^3/_4$ in) diameter may be acceptable where the pump out time is adequate.

12. On vessels over 6 m (20 ft) that have bilges that are not readily observed, audible bilge alarms or visual indicators should be provided at the operating station to indicate:

   (a) a high bilge level in a normally unattended machinery space or other space having an underwater through-hull connection, and
   (b) when an automatic bilge pump is operating.

13. Where overnight sleeping accommodation is provided, the high bilge level alarms should be audible to persons sleeping.

14. Where there are automatic bilge pumping arrangements they should be fitted with an overriding manual switch which is readily accessible.

Steering Systems

15. There should be provided a safe and efficient means of steering that is operable from the control position and capable of maneuvering the vessel under normal conditions.

16. The steering systems should be protected from obstructions, excessive heat and mechanical wear.

Exhaust Systems

Application

17. This subsection applies to all exhaust systems on both pleasure craft and commercial vessels equipped with inboard or stern drive engines or permanently installed auxiliary engines.

General Requirements

18. All exhaust systems shall be gastight to the hull interior.

19. All fittings, joints, clamps and supports of an exhaust system shall be accessible for inspection and repair.

20. Exhaust system piping and components shall be independently supported to minimize failure from vibration, shock, expansion or connection.

21. All supports, hangers, brackets or other fittings in contact with uncooled exhaust carriers shall be non-combustible and constructed so that the temperatures transmitted to the supporting materials will not cause combustion.

22. Protective guards, jacketing or covers shall be provided wherever persons or gear might come into contact with the exhaust system where the temperature exceeds 93°C. Engine maintenance or repair may make the temporary removal of this protection necessary.

23. Each exhaust system shall be designed and installed to prevent cooling water, rain water or raw water from entering the engine through the exhaust system under all normal operating and non-operating conditions.

24. No additional discharges other than cooling water shall share the exhaust gas passage.

Materials

25. Materials used in a marine engine exhaust system shall be resistant to saltwater corrosion, resistant to exhaust products and galvanically compatible.

26. Threaded pipe and fittings for the engine exhaust(s) shall be at least schedule 80 pipe or equivalent.

Construction Standards for Small Vessels

Section 10: Fire Protection Systems

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Section 10: Fire Protection Systems

Application: **Commercial Vessels Only**

1. The hull shall be arranged so that compartments used in the daily routine are accessible and escape routes are unobstructed and readily accessible.

2. Accommodation, service and machinery spaces shall have a second means of escape unless not warranted by the size and location of the space or where access to the deck is direct and readily available.

3. Spaces protected by a gas smothering system shall be gastight such that leakage of the system will not penetrate accommodation and service spaces.

4. Smoke and/or heat rise detectors shall be provided for sleeping quarters, service and machinery spaces. For the machinery spaces, the fire alarm system shall be hard-wired in accordance with *Marine Electrical Standards, TP 127, Section 21* (to alarm at the control position).

5. A totally enclosed engine compartment should normally be fitted with a fixed fire extinguishing system with sufficient quantity to completely blanket the space. The release device shall be outside of the engine compartment.

6. For CO_2 fixed fire extinguishing systems, the amount of CO_2 shall be 1.5 kg / m^3 of the gross volume of the engine compartment, but not less than 2 kg (4.5 lb). At least half the filling ratio shall be achieved in not more than ten seconds.

7. All inboard-powered vessels with an enclosed engine compartment shall have provisions for discharging extinguishing agent directly into the space immediately surrounding the engine without opening the primary access. Where portable equipment is provided for use, a small, suitably labeled, readily accessible port to the enclosure shall be provided that shall permit the extinguisher to remain upright during discharge. If the access port cannot be positioned so as to allow the portable extinguisher to remain upright, the portable extinguisher shall be equipped with a discharge hose.

8. For the engine compartment, CO_2 or where it cannot be gastight, dry chemical should be used. Dry chemical should be used for all other spaces.

9. In order to facilitate the evacuation of the vessel in the event of a fire, lifesaving equipment should be stowed in a clearly marked location which is as remote as practicable from areas which are at high risk of fire. Such areas would include machinery spaces and lockers used for the storage of volatile products.

10. Requirements for the size and type of portable fire extinguishers to be carried are to be found in the *Small Vessel Regulations* or the *Fire Detection and Extinguishing Equipment Regulations*, as applicable.

Construction Standards for Small Vessels

Appendix A:
Process and Forms for Manufacturers and Importers

ISSUE NUMBER:	**1**
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PLEASURE CRAFT SAFETY PLATE COMPLIANCE PROCESS FOR MANUFACTURERS AND IMPORTERS

(for all Pleasure Craft capable of being fitted with an engine)

The manufacturer must first apply in writing, on company letterhead, to obtain a Manufacturer's Identification Code (MIC) from Office of Boating Safety (OBS) if based in Canada (an MIC issued by the United States Coast Guard to U.S. manufacturers is recognized in Canada and vice versa).

CAPACITY PLATES (issued to Canadian manufacturers or importers). All new pleasure craft up and including 6 metres (20 feet) in length that are capable of being fitted with an engine of 7.5kW (10 hp) or more, must have a Capacity Plate fitted which indicates the recommended maximums for load and people, also engine power for outboard powered boats; this plate also confirms that the craft is constructed in accordance with the Construction Standards.

CONFORMITY PLATES (issued to Canadian manufacturers or importers). All other new manufactured pleasure craft capable of being fitted with an engine must be fitted with a Conformity Plate that confirms that the craft is constructed in accordance with the Construction Standards.

This INFORMATION KIT is issued to manufacturers and includes:

Construction Standards for Small Vessels TP 1332, Small Vessel Information Sheet, Statutory Declaration form, Applications for Capacity Plate form, Order form for Capacity Plates, Order form for Conformity Plates.

The following items and information are to be returned to OBS for processing:

1. The STATUTORY DECLARATION form stating that all models built or imported for use in Canada conform to Canadian Coast Guard (CCG) safety standards, which must be signed by a Canadian resident of the company and sworn in front of a Canadian Commissioner of Oaths or Notary Public. This form should be updated when further models are introduced and name changes occur.
2. The SMALL VESSEL INFORMATION SHEET with overall details of all the models.
3. PHOTOGRAPHS/illustrations of all craft showing the overall hull shape and style, and also the seating layout.
4. The COST of all plates to be ordered ($5.00 Canadian each plate), prepaid.

and in addition

for Pleasure Craft requiring Capacity Plates:

5. ORDER FORM for CAPACITY PLATES
6. CAPACITY PLATE APPLICATION FORMS (as applicable for monohull, pontoon or inflatable boats)

for Pleasure Craft requiring Conformity Plates:

7. ORDER FORM for CONFORMITY PLATES

Ratings for Capacity Plates will be submitted to manufacturers for approval prior to the plates being processed. At least thirty (30) working days should be allowed for the processing of applications. A unique serial number is issued for each plate and recorded as corresponding to a given manufacturer's model.

DEPARTMENT OF FISHERIES AND OCEANS

STATUTORY DECLARATION

I, ...
Name of Canadian responsible officer

....,
Capacity or Title

of the ....,
Name of Canadian manufacturer/importer

....

....

....
Address of Canadian manufacturer/importer

do solemnly declare that the boat or boats listed hereunder by model name and/or model number are built to comply with the Construction Standards for Small Vessels, TP 1332, as modified from time to time, or as substituted for by equivalent standards issued by the Department of Fisheries and Oceans. And I make solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of the *Canada Evidence Act*.

The Manufacturer's Identification Code is ______________

MINISTÈRE DES PÊCHES ET DES OCÉANS

DÉCLARATION STATUTAIRE

Je, soussigné, ...,
Nom de l'agent canadien responsable

....,
Titre ou qualité

de ....,
Nom du fabricant ou de l'importateur canadien

....

....

....
Adresse du fabricant ou de l'importateur canadien

déclare solennellement que le ou les bateaux désignés ci-dessous par leur nom ou leur numéro de modèle sont construits conformément aux *Normes de construction des petits bateaux, TP 1332*, telles que modifiées à l'occasion ou remplacées par des normes équivalentes émises par le ministère des Pêches et des Océans. Je fais cette déclaration solennelle en toute bonne foi et je reconnais qu'elle a la même valeur et les mêmes conséquences que si elle était faite sous serment et en vertu de la *Loi sur la preuve au Canada*.

Le code d'identification du fabricant est ______________

MODEL NAME - NOM DU MODÈLE	MODEL NUMBER - NUMÉRO DU MODÈLE

Name: ______________________________
(Canadian Responsible Officer - Please print)

Signature: ______________________________

Declared before me at ....

this .... day of .... 19 .....

____
Name of Canadian Commissioner of Oaths or Notary Public

____
Signature of Canadian Commissioner of Oaths or Notary Public

____
Official Seal

Nom : ______________________________
(Agent canadien responsable - inscrire en lettres moulées)

Signature : ______________________________

Déclaré en ma présence à ....

le .... jour de .... 19 .....

____
Nom du commissaire aux serments du Canada ou du notaire public

____
Signature du commissaire aux serments du Canada ou du notaire public

____
Sceau officiel

DEFINITIONS/DÉFINITIONS

Manufacturer's Identification Code (M.I.C.), the first three characters of the Hull Identification Number.
Code d'identification du fabricant (CIF), les trois premiers caractères du numéro d'identification de la coque.

Current Company Name: the name the company is known by.
Nom actuel de l'entreprise : Le nom sous lequel l'entreprise est connue.

Other or Past Company Name: Other names the company may be associated with and/or Past Company Name.
Les autres noms ou les anciens noms de l'entreprise : Les autres noms qu'on peut associer à l'entreprise ou son ancien nom.

Importer: If you are an importer, the makes and models of vessels imported and/or distributed should be specified.
Importateur : Si vous êtes importateur, veuillez indiquer la marque et le modèle des bateaux importés ou distribués.

Length: Length overall on the centreline from the stem post to the stern post or transom.
Longueur : La longueur hors-tout centrale à partir de l'étrave jusqu'à l'étambot ou jusqu'au tableau.

Width (Beam): Maximum width.
Largeur : La largeur maximale.

Transom Height: Height from the bottom edge of the transom to the bottom edge of the motor cut-out or to the top of the forward bulkhead of the motor well.
Hauteur du tableau : La hauteur entre l'arète basse du tableau et l'arète basse de la découpure, ou le bord supérieur de la cloison avant du puits à moteur.

Classification codes (to be checked off) / Codes de classification (cocher ce qui convient)

	BOAT TYPES (1) TYPES DE BATEAU (1)			HULL MATERIAL (2) MATÉRIAU DE COQUE (2)			HULL FORM (3) FORME DE LA COQUE (3)	
101	Runabout « Runabout »		201	Fibreglass - glassreinforced plastic Fibre de verre, plastique renforcé de verre		301	Flat bottom/ Coque à fond plat	
102	Bowrider « Bowrider »		202	Aluminum/Aluminium		302	Round bottom/ Coque à fond arrondi	
103	Race/performance/ Bateau de course		203	Steel/Acier		303	Vee bottom/ Coque à fond en V	
104	Cruiser/ Bateau de croisière		204	Wood/Bois		304	Modified vee/ Coque à fond en V modifié	
105	Sport fisherman/ Bateau de pêche sportive		205	Ferro cement/Ferrociment		305	Deep vee/ Coque à fond en V profond	
106	Bass boat/« Bass boat »					306	Tunnel hull/Coque tunnel	
107	Jon boat/« Jon boat »					307	Tri-hull/Coque trimaran	
109	Inflatable/ Embarcation pneumatique					308	Cathedral hull/ Coque cathédrale	
110	Sail only/ Bateau à voile seulement					309	Catamaran/ Coque catamaran	
111	Sail auxiliary/ Bateau à voile auxiliaire					310	Displacement hull/ Coque à déplacement	
112	Houseboat/Bateau-logement					311	Pontoon/Coque ponton	
113	Pontoon/Ponton							
120	Other: specify Autre : préciser		220	Other: specify/ Autre : préciser		320	Other: specify/ Autre : préciser	

	ENGINE/MOTEUR (4)			STEERING /COMMANDE (5)	
401	Inboard gasoline/ Moteur en-bord à essence		501	Remote fwd of midships/ À distance, à l'avant du milieu	
402	Inboard diesel/ Moteur en-bord à combustion diesel		502	Remote aft of midships/ À distance, à l'arrière du milieu	
403	Inboard LPG/CNG/ Moteur en-bord à gaz liquéfié ou à gaz naturel comprimé		503	Outboard tiller arm/ Bras du gouvernail à l'extérieur	
404	Outboard, no motor well/ Moteur hors-bord sans puits à moteur		504	Rudder and tiller/ Gouvernail et barre de gouvernail	
405	Outboard with motor well/ Moteur hors-bord avec puits à moteur		505	Rudder and wheel/ Gouvernail et volant	
406 G	Inboard/outboard gasoline Moteur en-bord/hors-bord à essence		506	Other: specify Autre : préciser	
406 D	Inboard/outboard diesel/ Moteur en-bord/hors-bord à combustible diesel				
407	Sail drive/Propulsion à voile				
408	Electric/Propulsion électrique				
409	Jet drive/Propulsion à réaction				
410	Air drive/Propulsion à air				
420	Other: specify/Autre : préciser				

MANUFACTURERS OF NEW BOATS / FABRICANTS DE NOUVEAUX BATEAUX
SMALL VESSELS INFORMATION FORM/FORMULAIRE D'INFORMATION SUR LES PETITES EMBARCATIONS

Current company name : ____________________
Nom actuel de l'entrepris : ____________________
Address/Adresse : ____________________
Telephone/Téléphone : ____________________ Facsimile/Télécopieur : ____________________
Manufacturer's identity code (mic)/Code d'identification du fabricant (CIF) : ____________________
Declaration date(s)/Date(s) de déclaration : ____________________
Other or past company name/Autre nom ou ancien nom de l'entreprise : ____________________
Address/Adresse : ____________________

Dimensions should be in metric form/Les dimensions doivent être métriques

* applies to ratings issued by CCG/* s'applique aux évaluations émises par la GCC

MODEL NAME NOM DU MODÈLE	MODEL MODÈLE 1	MODEL MODÈLE 2	MODEL MODÈLE 3	MODEL MODÈLE 4	MODEL MODÈLE 5
Length/Longueur					
Width (beam)/Largeur					
Transom height/Hauteur du tableau					
Transom width/Largeur du tableau					
* Maximum load/Charge maximale					
* Engine power/Puissance du moteur					
Type – code 1					
Material /Matériau – code 2					
Hull/Forme de la coque – code 3					
Engine/Moteur – code 4					
Steering/Appareil de gouverne – code 5					

Notes ____________________
____
____

MODEL NAME NOM DU MODÈLE	MODEL MODÈLE 6	MODEL MODÈLE 7	MODEL MODÈLE 8	MODEL MODÈLE 9	MODEL MODÈLE 10
Length/Longueur					
Width (beam)/Largeur					
Transom height/Hauteur du tableau					
Transom width/Largeur du tableau					
* Maximum load/Charge maximale					
* Engine power/Puissance du moteur					
Type – code 1					
Material/Matériau – code 2					
Hull/Forme de la coque – code 3					
Engine/Moteur – code 4					
Steering/Appareil à gouverne – code 5					

Notes ____________________
____
____

If imported vessels, list manufacturer name(s) and address(es) and indicate above under "notes" model manufacturer./ Pour les bateaux importés, indiquez le nom et l'adresse des fabricants dans la section « Notes ».

Canadian Coast Guard　Garde côtière canadienne

APPLICATION FOR BOAT CAPACITY PLATE (MONOHULLS)
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION (MONOCOQUE)

INSTRUCTIONS

Fill in the measurements and other information required in this form and mail to the address below together with photos/illustrations and the prescribed fee for each plate.

DO NOT SEND CASH.

(WHERE A NUMBER OF PLATES FOR BOATS OF IDENTICAL HULL DIMENSIONS ARE REQUIRED, ONE APPLICATION WILL SUFFICE FOR ALL.)

The purpose of this form is to obtain a series of measurements from which the Department can make calculations to determine the volume of your boat below the Static Float Plane, from which safe load capacity and engine power can be calculated.

The measurements required are the length, widths, and a series of vertical depths at different parts of your boat.

In the centre portion is a series of sketches – check one that looks like your boat. It is not possible to depict all types and if you cannot find one that seems to resemble your boat, describe it in your own words or attach any literature you may have that describes the boat.

Below the sketches is a section dealing with the hull shape. This has a bearing on the ratings selected, and the first question asks whether the boat has a flat bottom, a hard chine or vee bottom, a round bilge or round bottom or a cathedral-type hull. Pick the one that describes your boat closely at the mid-length. The next question asks for the NUMBER OF OCCUPANT POSITIONS. If your craft HAS a motor well, insert the dimensions in the next box. The last question asks whether or not your boat has a steering wheel and motor controls and if they are located forward of Section 'C'; these conditions have considerable bearing on the way a boat handles under power, and on the recommended maximum engine power.

If further information is required, or to return the documents, please use the address below:

Office of Boating Safety (#5041)
Canadian Coast Guard
200 Kent Street, 5h Floor, Centennial Towers
Ottawa, Ontario K1A OE6
CANADA
Tel.: (613) 991-3127; 991-3128
Fax: (613) 996-8902

Donnez toutes les mesures et les autres renseignements demandés dans le présent formulaire, et expédiez le tout par la poste à l'adresse ci-dessous, en incluant les photos/illustrations et le droit prescrit pour chaque plaque requise.

N'ENVOYEZ PAS D'ARGENT COMPTANT.

(SI VOUS AVEZ BESOIN D'UN CERTAIN NOMBRE DE PLAQUES POUR DES EMBARCATIONS DONT LA COQUE POSSÈDE DES DIMENSIONS IDENTIQUES, UNE SEULE DEMANDE SUFFIRA.)

Le présent formulaire vise à recueillir un certain nombre de mesures dont se servira le Ministère pour faire les calculs qui lui permettront de déterminer le volume de votre embarcation sous le plan de flottaison statique, et de recommander la charge brute et la puissance qui lui conviennent.

Les mesures demandées sont la longueur, les largeurs et une gamme de hauteurs mesurées à différents points de votre embarcation.

La partie centrale du formulaire comprend une série de croquis parmi lesquels vous choisirez celui qui ressemble à votre embarcation. Il n'est pas possible de représenter tous les types d'embarcation, et si aucun des croquis ne ressemble à votre embarcation, faites la description de celle-ci en vos propres termes ou joignez toute description que vous pourriez posséder.

L'espace réservé aux croquis est suivi d'une section relative à la forme de la coque. Celle-ci situe votre embarcation dans l'une ou l'autre des catégories établies. C'est pourquoi on vous demande d'abord si votre embarcation est à fond plat, à bouchains vifs ou à fond en « V », à bouchains, à fond arrondi ou de type cathédrale. Cochez la réponse qui correspond le plus à votre embarcation à mi-longueur. ON VOUS DEMANDE ENSUITE LE NOMBRE DE PLACES POUR LES OCCUPANTS. Si votre embarcation est dotée d'un puits à moteur, inscrivez les dimensions de ce dernier dans la case suivante. On vous demande enfin si votre embarcation est munie d'un volant et de commandes de moteur et s'ils sont situés en avant de la section « C ». Cela a une importance énorme sur la conduite d'une embarcation à moteur en marche et sur la puissance motrice maximale qui sera recommandée.

Si vous avez besoin de renseignements additionnels, ou pour acheminer les documents, adressez-vous au :

Bureau de la sécurité nautique (n° 5041)
Garde côtière canadienne
200, rue Kent, 5^{e} étage, Tours Centennial
Ottawa (Ontario) K1A OE6
CANADA
Tél. : (613) 991-3127 ou 991-3128
Fax : (613) 996-8902

Canadä

Canadian Coast Guard
Garde côtière canadienne

APPLICATION FOR BOAT CAPACITY PLATE (MONOHULLS)
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION (MONOCOQUE)

SUGGESTED METHOD OF OBTAINING MEASUREMENTS

To start, make sure your boat is on, or over, a level surface and on an even keel so that the Static Float Plane (S.F.P.) is horizontal. Now follow these simple steps to obtain the necessary measurements:

1) Measure the height of the S.F.P. from the ground.

2) Measure off the Calculation Length and enter it on the form.

3) Mark the Calculation Length on the ground with string, chalk or some similar method, making sure it is beneath and in line with the centre of the boat.

4) Divide the Calculation Length into four sections - A, B, C and D in the diagram - and then divide the forward quarter in half to obtain section AA.

5) From each of these points mark off a line at ninety degrees to the centre line out past the edge of the boat on one side.

6) Drop a line straight down S.F.P. at the side to each of the lines in 5). These points on the ground at each section back to the centre line will give you your half width at each section.

7) Now divide each of these half widths into five equal lengths thus providing points a, b, c, d, e and f as shown in the diagrams.

8) From each of the points in 7) measure upward to the hull and subtract that measurement from the figure you obtained in 1). This will give you the depth required for capacity calculations.

9) Enter the figures on the form and repeat the process for each section.

SHOULD YOU FIND IT EASIER TO MEASURE THE ACTUAL INSIDE, OF THE BOAT, BEAR IN MIND THAT MEASUREMENTS ARE TO THE OUTSIDE OF THE HULL BUT DO NOT INCLUDE RUBBERS, FENDERS, OR SPRAY RAILS.

If you experience difficulty in obtaining the required measurements of your boat, you may obtain advice by telephoning or writing to the Office of Boating Safety, Canadian Coast Guard, Ottawa.

DEFINITIONS

Static Float Plane

With the boat on even keel, the Static Float Plane is the plane parallel to the keel which is below the lowest point on the boat at which water can enter the hull. It is below which all measurements are taken.

Calculation Length

The length measured parallel to the Static Float Plane, from the foremost part of the boat to the midpoint of the transom below the Static Float Plane.

Transverse Sections (SA, AA, A, B, C, & D)

Are established at the quarter lengths and at the midpoints of the forward quarter which, with the exception of the transom, are perpendicular to the Static Float Plane.

Vertical Depths (a, b, c, d, e & f)

Are established below the Static Float Plane in each transverse section at five equidistant intervals between the boat's longitudinal centreline and the extreme hull width below the Static Float Plane.

MÉTHODE SUGGÉRÉE POUR OBTENIR LES MESURES

Prenez soin tout d'abord de placer votre embarcation sur ou au-dessous d'une surface plane de façon à ce que la hauteur entre l'avant et l'arrière soit la même et que le plan de flottaison statique (PFS) soit horizontal. Afin d'obtenir les mesures nécessaires, suivez les étapes décrites ci-après :

1) Mesurez la distance séparant le PFS du sol.

2) Mesurez la longueur de calcul et inscrivez-la sur le formulaire.

3) Tracez sur le sol une ligne correspondant à la longueur de calcul à l'aide d'une ficelle, d'une craie ou de tout autre moyen du genre, parallèlement à l'axe longitudinal de l'embarcation.

4) Divisez la ligne tracée sur le sol en quatre parties égales, A, B, C et D, sur le schéma, puis divisez également le premier quart en deux parties de façon à obtenir la partie AA.

5) À partir de chacun de ces points, dessinez une ligne à angle droit par rapport à l'axe longitudinal, dépassant la largeur de l'embarcation sur un côté.

6) Laissez tomber un fil à plomb à partir du PFS jusqu'à chacune des lignes mentionnées en 5). La distance séparant le point d'intersection et l'axe longitudinal de chacune des parties correspond à la moitié de la largeur de chaque section.

7) Divisez ensuite chacune des demi-largeurs en cinq parties égales délimitées par a, b, c, d, e et f, telles qu'illustrées sur les schémas.

8) Mesurez la distance séparant chacun des points mentionnés en 7) de la coque et soustrayez cette dimension du chiffre obtenu en 1). La différence correspond à la profondeur nécessaire aux calculs de capacité.

9) Inscrivez les données obtenues sur le formulaire et répétez le processus pour chacune des parties.

SI VOUS ESTIMEZ PLUS FACILE DE CALCULER LES DIMENSIONS INTÉRIEURES RÉELLES DE VOTRE EMBARCATION, N'OUBLIEZ PAS QUE TOUTES LES MESURES DOIVENT ENGLOBER L'ÉPAISSEUR DE LA COQUE MAIS EXCLURE LES LISTONS, LES DÉFENSES ET LES RAMBARDES.

Si vous avez de la difficulté à établir les mesures requises, vous pouvez obtenir des conseils en téléphonant ou en écrivant au Bureau de la sécurité nautique de la Garde côtière canadienne, à Ottawa.

DÉFINITIONS

Plan de flottaison statique

Lorsque le bateau est sans assiette, le plan de flottaison statique est un plan tracé parallèlement à la quille qui est en-dessous du point le plus bas où l'eau peut entrer dans la coque. Toutes les mesures sont calculées en-dessous de ce plan.

Longueur de calcul

Longueur mesurée parallèlement au plan de flottaison statique depuis la partie la plus avant du bateau jusqu'à mi-distance du tableau sous le plan de flottaison statique.

Sections transversales (SA, AA, A, B, C, et D)

Les sections transversales sont établies aux quarts de la longueur et au point centre du quart avant qui, à l'exception du tableau, sont perpendiculaires au plan de flottaison statique.

Profondeurs (a, b, c, d, e et f)

Les profondeurs sont établies sous le plan de flottaison statique dans chacune des sections transversales, à cinq intervalles équidistants entre l'axe longitudinal de l'embarcation et la largeur extrême de la coque sous le plan de flottaison statique.

Canada

INSTRUCTIONS FOR TAKING MEASUREMENTS (MONO-HULL BOATS)

INSTRUCTIONS POUR MESURER LES DIMENSIONS (EMBARCATIONS MONOCOQUE)

To start, make sure your boat is on or over a level surface and the gunwale or S.F.P. (static floatplane, see diagram) is horizontal. Take all the necessary precautions to ensure the vessel is stable and will not move while you are taking your measurements. (Note: all measurements to be in millimetres)

1) Measure the length of your vessel's hull. Enter that length here ______. This length will be called "Calculation Length". (See diagram 1, step 1). Enter the Calculation Length in diagram 3.

2) Mark the "Calculation Length" on the ground with string, chalk, or some other similar method, making sure it is beneath and in line with the centre of the boat (along the keel).

3) Measure the distance from the gunwale to the ground at the vessel midpoint. (See diagram 1). Enter that distance here _______.

4) Measure the distance from the keel at the centreline to the ground (see diagram 1). Enter that distance here. ______.

5) Subtract 4.) From 3.) And enter that height here ________. This height will be called dimension "**f**". (See diagram 1).

6) Divide the "Calculation Length into four equal sections (Calculation Length / 4 = ______) and mark these points on the line.

In the next steps, we are going to label these points and use this to find the points where the hull is measured.

Please look at diagram 2 now and observe how the diagram is labelled. You will notice the "sections" you divided in step 6 are marked, from the

Prenez soin tout d'abord de placer votre embarcation sur ou au-dessus d'une surface plane de sorte que le plat-bord ou le plan de flottaison statique (PFS) soit horizontal. Assurez-vous de prendre les mesures nécessaires afin que l'embarcation soit stable au moment où vous prendrez les mesures. (NOTE : Toutes les mesures doivent être en millimètres).

1) Mesurez la longueur de la coque de votre embarcation. Inscrivez la longueur ici : ____. Cette longueur se nomme « la longueur de calcul ». (Voir le schéma 1, étape 1.) Inscrivez la longueur de calcul dans le schéma 3.

2) Tracez la longueur de calcul sur le sol avec une ficelle, une craie ou toute autre méthode similaire en vous assurant qu'elle est alignée sous le centre de l'embarcation (d'un bout à l'autre de la quille).

3) Mesurez la distance à partir du plat-bord jusqu'au sol, au milieu de l'embarcation (voir le schéma 1). Inscrivez la distance ici : _____.

4) Mesurez la distance entre l'axe longitudinal de la quille et le sol (voir le schéma 1.) Inscrivez la distance ici : _____.

5) Soustrayez la distance obtenue au point 4 de celle du point 3 et inscrivez le résultat de la hauteur ici : ____. Cette hauteur s'appelle la dimension « **F** » (voir le schéma 1).

6) Divisez la « longueur de calcul » en quatre parties égales (L de C / 4 = _____), et indiquez ces points sur la ligne.

À la prochaine étape, nous marquerons ces points et les utiliserons pour repérer les points qui servent à mesurer la coque.

Regardez le schéma 2 maintenant, et observez comment il est étiqueté. Vous remarquerez que les « sections » divisées à l'étape 6 sont indiquées du tableau (poupe) à la proue (avant) comme suit : D, C, B, A, puis AA et SA. La section AA correspond à la section « A » divisée en deux.

transom (stern) forward D, C, B, A, then AA & SA. The mark "AA" is found by dividing the section "A" in half.

Take the number found in step 6.) Divide by 2 (_____/2 =_____ mark this point AA on the line you drew in step 2.

The mark "SA" is only used for boats with a square bow.

7) From each of these points (AA, A, B, C, D (and SA if it applies)) mark off a line at ninety degrees to the centreline (calculation length) out just past the edge of the boat on one side. If your boat has a square bow, label and follow the guidelines for the other points (see diagram 2) and mark "SA". Again, these lines will be used to find the points on the hull to measure heights from the ground. Please refer to diagram 2.

8) From the side of the boat that has the lines below it, drop a line straight down from the hull over each point AA, A, B, C, & D (do not use the edge of a spray rail, rubbing rails or lips). Mark that spot on each section line (AA, A, B, C, & D). This will give you an outline of the shape of your hull at each section.

9) On line AA, measure the distance from the centreline to the point marked AA. Enter that distance here _____. This distance is called "Half Width at AA". Enter this length in diagram 3.

10) On line A, measure the distance from the centreline to the point marked A. Enter that distance here ____. This distance is called " Half Width at A". Enter this length in diagram 3.

11) On line B, measure the distance from the centreline to the point marked B. Enter that distance here _____. This distance is called " Half Width at B".

Prenez le chiffre obtenu à l'étape 6, et divisez-le par 2 (_____/2=_____). Indiquez le résultat « AA » sur la ligne tracée à l'étape 2.

La section « SA » est seulement utilisée pour les embarcations à proue carrée.

7) À tous les points (AA, A, B, C, D (et SA si applicable)), tracez une ligne perpendiculaire à l'axe du bateau (longueur de calcul) excédant légèrement un côté de l'embarcation. Si votre embarcation a une proue carrée, indiquez-le en inscrivant SA et suivez la même procédure que pour les autres points (voir le schéma 2). N'oubliez pas que ces lignes seront utilisées afin de trouver les points, sur la coque, pour mesurer la hauteur à partir du sol. Veuillez vous reporter au schéma 2.

8) Du côté de l'embarcation sous lequel les lignes se trouvent, tracez une ligne directe partant de la coque vers tous les points (AA, A, B, C et D). N'utilisez pas les côtés de l'embrun, de la ceinture ou des lèvres. Indiquez cette position à chaque section de la ligne (AA, A, B, C et D). Cela vous donnera un aperçu de la forme de votre coque à chaque section.

9) À la ligne AA, mesurez la distance entre l'axe du bateau et le point AA. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur AA ». Inscrivez-la au schéma 3.

10) À la ligne A, mesurez la distance entre l'axe du bateau et le point A. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur A ». Inscrivez-la au schéma 3.

11) À la ligne B, mesurez la distance entre l'axe du bateau et le point B. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur B ». Inscrivez-la au schéma 3.

INSTRUCTIONS FOR TAKING MEASUREMENTS (MONO-HULL BOATS)
INSTRUCTIONS POUR MESURER LES DIMENSIONS (EMBARCATIONS MONOCOQUE)

Enter this length in diagram 3.

12) On line C, measure the distance from the centreline to the point marked C. Enter that distance here _____. This distance is called " Half Width at C". Enter this length in diagram 3.

13) On line D, measure the distance from the centreline to the point marked D. Enter that distance here _____. This distance is called " Half Width at D". Enter this length in diagram 3.

14) If you have a square bow on line SA, measure the distance from the centreline to the point marked SA. Enter that distance here _____. This distance is called " Half Width at SA". Enter this length in diagram 3.

15) Now divide the lines AA, A, B, C, & D each by five and mark those lengths on each line. Label each one of those marks "a, b, c, d, e, & f" from the outside towards the centreline (see diagram 3).

16) From each of the points in 15) Marked a, b, c, d, e, & f measure upward to the hull and enter the distances below.

(AA) a____ b____ c____ d____ e____ f____

(A) a____ b____ c____ d____ e____ f____

(B) a____ b____ c____ d____ e____ f____

(C) a____ b____ c____ d____ e____ f____

(D) a____ b____ c____ d____ e____ f____

17) With each of the measurements found above: subtract the measurement found in step 4.) And enter that length in diagram 3.)

12) À la ligne C, mesurez la distance entre l'axe du bateau et le point C. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur C ». Inscrivez-la au schéma 3.

13) À la ligne D, mesurez la distance entre l'axe du bateau et le point D. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur D ». Inscrivez-la au schéma 3.

14) Si vous avez une proue carrée, à la ligne SA, mesurez la distance entre l'axe du bateau et le point SA. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur SA ». Inscrivez-la au schéma 3.

15) Maintenant, divisez chaque ligne AA, A, B, C et D par cinq et inscrivez ces longueurs sur chaque ligne. Nommez chacun de ces points « a, b, c, d, e et f » de l'extérieur vers l'axe du bateau (voir le schéma 3).

16) À partir des points obtenus à l'étape 15, inscrivez les mesures a, b, c, d, e et f vers le haut de la coque et indiquez les distances ci-dessous.

(AA) a____ b____ c____ d____ e____ f____

(A) a____ b____ c____ d____ e____ f____

(B) a____ b____ c____ d____ e____ f____

(C) a____ b____ c____ d____ e____ f____

(D) a____ b____ c____ d____ e____ f____

17) Prenez chaque mesure trouvée ci-haut, et soustrayez la mesure trouvée à l'étape 4. Inscrivez la longueur au schéma 3.

Fisheries and Oceans Canada
Pêches et Océans Canada

Coast Guard
Garde côtière

APPLICATION FOR BOAT CAPACITY PLATE (MONOHULLS)
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION (MONOCOQUE)

PRINT YOUR NAME AND MAILING ADDRESS IN BOX BELOW
DANS LE CADRE CI-DESSOUS, ÉCRIVEZ VOTRE NOM ET VOTRE ADRESSE EN LETTRES MOULÉES

____
____
____

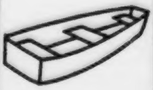
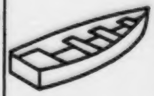
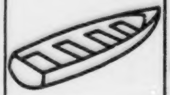
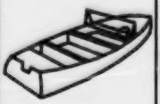
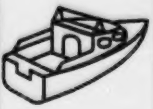
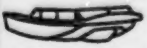
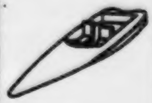
Telephone/Téléphone Facsimile/Télécopieur

ALL MEASUREMENTS TO BE IN MILLIMETRES

TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

Model of Boat - Modèle d'embarcation (if applicable/s'il y a lieu)	Manufacturer's name or if homebuilt - Nom du fabricant ou construction domestique
Year built and manufacturer's identification code (if applicable) Année de construction et code d'identification du fabricant (s'il y a lieu)	

CHECK THE SKETCH WHICH MOST CLOSELY RESEMBLES YOUR BOAT
PARMI LES CROQUIS CI-DESSOUS, CHOISISSEZ CELUI QUI RESSEMBLE LE PLUS À VOTRE EMBARCATION

 ☐	 ☐	 ☐	 ☐	 ☐	 ☐	 ☐

BOTTOM CONTOUR - FOND ☐ Is your boat flat bottom? Votre embarcation est-elle à fond plat? ☐ Hard chine or V bottom? À bouchains vifs ou à fond en « V »? ☐ Round bilge or round bottom? À bouchains ou à fond arrondi? ☐ Cathedral type? Style cathédral?	Number of permanent occupant positions on board Nombre de places permanentes pour les occupants à bord ☐	MOTOR WELL dimensions Dimensions du PUITS À MOTEUR Length Longueur ☐ Breadth Largeur ☐ Mean depth Profondeur moyenne ☐	Does your boat have a steering wheel and motor control? Votre embarcation est-elle munie d'un volant et de commandes de moteur? ☐ Yes Oui ☐ No Non Steering control located forward of section C? Commande de direction située en avant de la section C? ☐ Yes Oui ☐ No Non

Dry Weight of Boat in **kilograms** (Includes all permanent structure and deck, railings, console, cabin, seats.) Le poids sec du bateau **en kilogrammes** (incluant toute structure permanente et le pont, les garde-corps, la console, la cabine et les sièges.)	kg

Illustrations/photos of the boat are required to be submitted showing:
i) the hull shape, and
ii) inboard location for all those persons to be carried.

It is the responsibility of the boatbuilder and owner to ensure that the boat complies with the Canadian Coast Guard Construction Standards for Small Vessels.

Outboard motors mounted on the transom or transom brackets, are to be installed in such a way that their movement is not restricted by any part of the boat's structure and there is to be sufficient clearance between the boat's structure and the outboard motor in all positions that would allow for the free movement of a person's arm.

Soumettre des illustrations ou des photos de l'embarcation indiquant :
i) la forme de la coque;
ii) l'emplacement alloué pour toutes les personnes transportées à bord.

Il incombe au fabricant et au propriétaire de l'embarcation de s'assurer que celle-ci est conforme aux *Normes de construction des petits bateaux* de la Garde côtière canadienne.

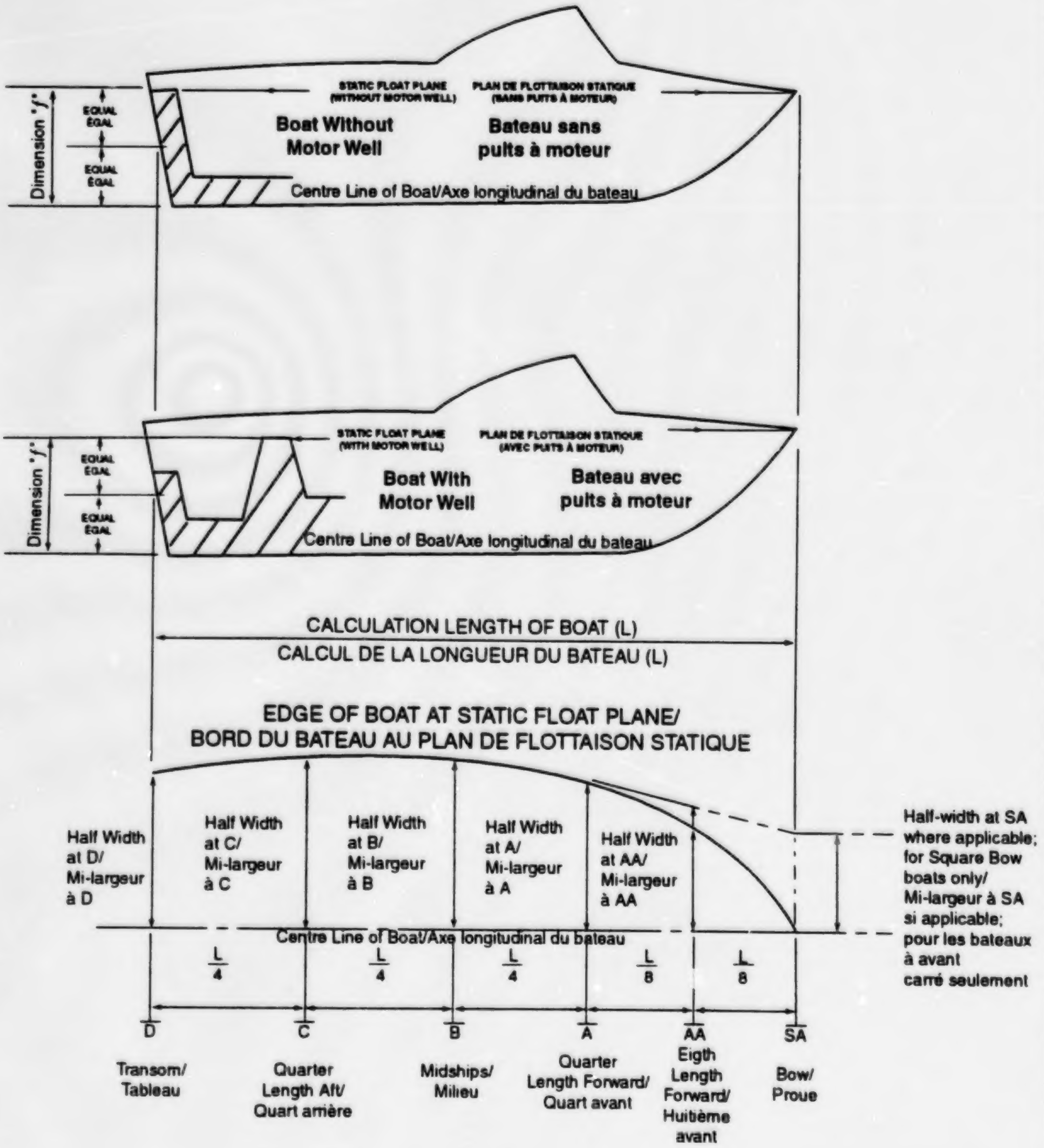
Les moteurs hors-bord montés sur le tableau ou sur des supports arrière doivent être installés de façon à ce qu'aucune partie de l'embarcation n'entrave leur mouvement. Il doit y avoir suffisamment de jeu entre la structure de l'embarcation et le moteur hors-bord, dans toutes les positions, pour qu'une personne puisse y passer librement le bras.

Canada

Fisheries and Oceans Canada
Pêches et Océans Canada

Coast Guard
Garde côtière

APPLICATION FOR BOAT CAPACITY PLATE (MONOHULLS) DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION (MONO-COQUES)


STATIC FLOAT PLANE (WITHOUT MOTOR WELL)
PLAN DE FLOTTAISON STATIQUE (SANS PUITS À MOTEUR)
Dimension 'f'
EQUAL ÉGAL
EQUAL ÉGAL
Boat Without Motor Well
Bateau sans puits à moteur
Centre Line of Boat/Axe longitudinal du bateau
STATIC FLOAT PLANE (WITH MOTOR WELL)
PLAN DE FLOTTAISON STATIQUE (AVEC PUITS À MOTEUR)
Dimension 'f'
EQUAL ÉGAL
EQUAL ÉGAL
Boat With Motor Well
Bateau avec puits à moteur
Centre Line of Boat/Axe longitudinal du bateau
CALCULATION LENGTH OF BOAT (L)
CALCUL DE LA LONGUEUR DU BATEAU (L)
EDGE OF BOAT AT STATIC FLOAT PLANE/
BORD DU BATEAU AU PLAN DE FLOTTAISON STATIQUE
Half Width at D/ Mi-largeur à D
Half Width at C/ Mi-largeur à C
Half Width at B/ Mi-largeur à B
Half Width at A/ Mi-largeur à A
Half Width at AA/ Mi-largeur à AA
Half-width at SA where applicable; for Square Bow boats only/ Mi-largeur à SA si applicable; pour les bateaux à avant carré seulement
Centre Line of Boat/Axe longitudinal du bateau
L/4
L/4
L/4
L/8
L/8
D
C
B
A
AA
SA
Transom/ Tableau
Quarter Length Aft/ Quart arrière
Midships/ Milieu
Quarter Length Forward/ Quart avant
Eigth Length Forward/ Huitième avant
Bow/ Proue

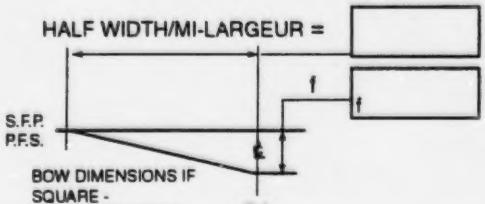
Canada

Fisheries and Oceans Canada / Pêches et Océans Canada

Coast Guard / Garde côtière

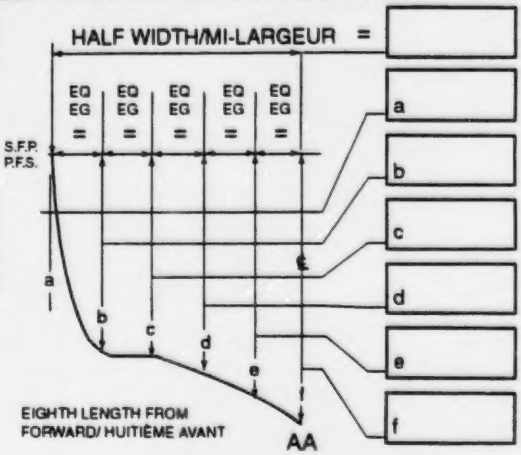
ALL MEASUREMENTS TO BE IN MILLIMETRES/TOUTES LES DIMENSIONS DOIVENT ÊTRE EN MILLIMÈTRES

CALCULATION LENGTH/ LONGUEUR DE CALCUL ☐


HALF WIDTH/MI-LARGEUR =
f
f
S.F.P.
P.F.S.
℄

BOW DIMENSIONS IF SQUARE - OTHERWISE ZERO/ DIMENSION DE LA PROUE SI CARRÉE - AUTREMENT ZÉRO

SA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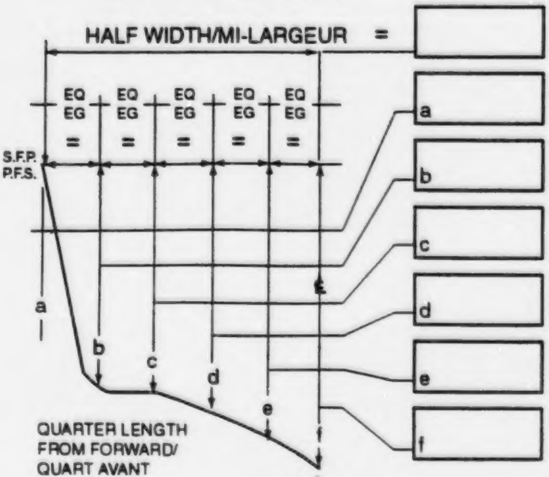
EIGHTH LENGTH FROM FORWARD/ HUITIÈME AVANT

AA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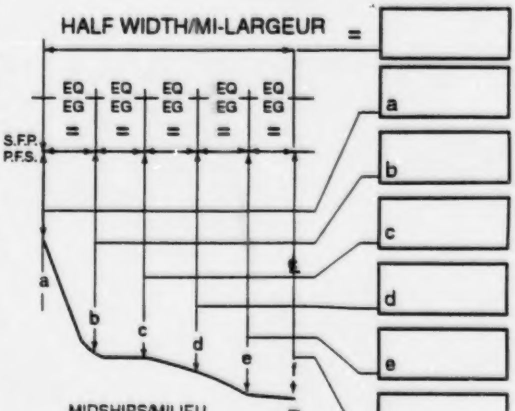
QUARTER LENGTH FROM FORWARD/ QUART AVANT

A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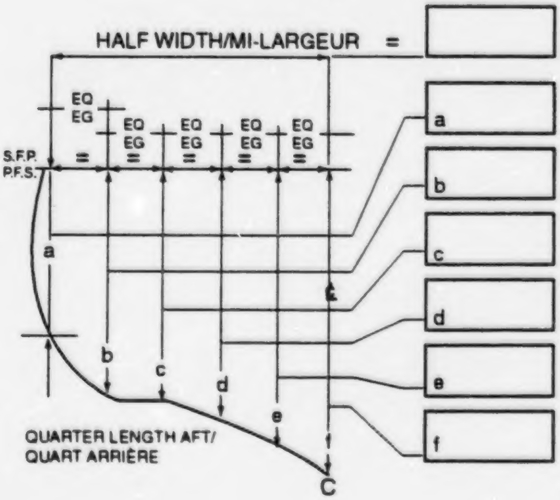
MIDSHIPS/MILIEU

B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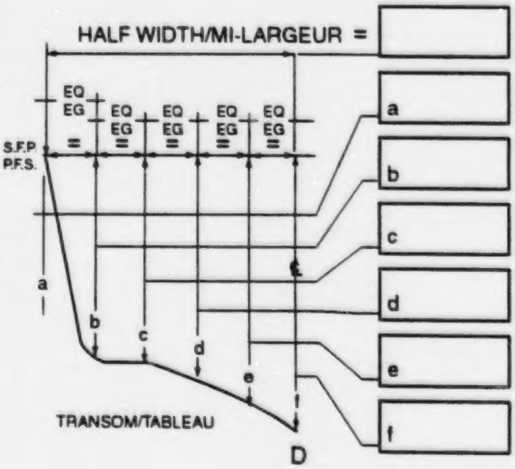
QUARTER LENGTH AFT/ QUART ARRIÈRE

C


HALF WIDTH/MI-LARGEUR =
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EQ EG =
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P.F.S.
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c
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e
f

TRANSOM/TABLEAU

D

NOTE: Dimension 'a' on half sections AA, A, B, C, and D, will be zero unless the hull topside down from the Static Float Plane is vertical or lays outward.
NOTA : La dimension «a» aux sous-sections AA, A, B, C et D sera de zéro, à moins que la coque inversée depuis le plan de flottaison statique soit verticale

Canada

Canadian Coast Guard	Garde côtière canadienne

APPLICATION FOR MULTIHULL BOAT CAPACITY PLATE
DEMANDE DE PLAQUE DE CAPACITÉ POUR BATEAUX MULTICOQUE

PRINT YOUR NAME AND MAILING ADDRESS IN BOX BELOW
DANS LE CADRE CI-DESSOUS, ÉCRIVEZ VOTRE NOM ET VOTRE ADRESSE EN LETTRES MOULÉES

Telephone/Téléphone
Facsimile/Télécopieur

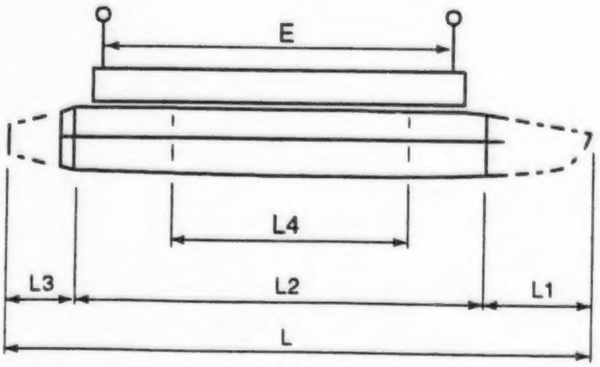
ALL MEASUREMENTS TO BE IN MILLIMETRES

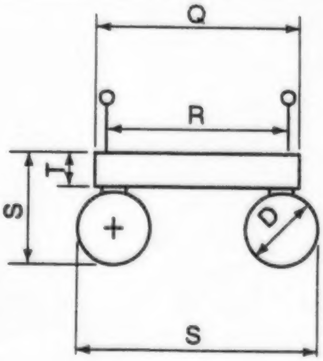
TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

It is necessary that the following information be provided when applying for a capacity plate for multihull boats.

Fournir tous les renseignements pour obtenir une plaque de capacité pour embarcation multicoque.

Name/Model Number - Nom/numéro du modèle





ALL MEASUREMENTS TO BE IN MILLIMETRES - TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

LENGTH - LONGUEUR

Overall - Hors tout	L mm	Irregular section forward (if any)- Partie avant de forme irrégulière (s'il y a lieu)	L1 mm	Parallel section - Partie parallèle	L2 mm
Irregular section aft (if any)- Partie arrière de forme irrégulière (s'il y a lieu)	L3 mm	Longest space between two watertight bulkheads in any part of the pontoon (that is not foam-filled.)		Espace le plus long entre deux cloisons étanches dans n'importe quelle partie du flotteur (qui n'est pas rempli de mousse)	L4 mm

WIDTH - LARGEUR

Maximum - Maximale	B mm

Diameter (external) (If pontoons are not circular in cross-section, use the diameter of the largest circle that can be inscribed in the pontoon)- Diamètre (extérieur) (Si les flotteurs ne sont pas circulares, donner le diamètre du plus grand cercle qui pourrait être tracé à l'intérieur du flotteur)	D mm

DECK - PONT

Length between railings Longueur entre les garde-corps	E mm	Width overall Largeur hors tout	Q mm	Width between railings Largeur entre les garde-corps	R mm
Height above bottom of pontoons Hauteur à partir du fond des flotteurs	S mm	Depth Profondeur	T mm		

Dry Weight of boat in kilograms including: pontoons, deck, railings, console, cabin, seats and any other permanent structure or fittings (Do not include engine and equipment or portable fuel tank)- Le poids sec du bateau en kilogrammes, incluant les flotteurs, le pont, les garde-corps, la console, la cabine, les sièges et toute autre structure permanente ou accessoires (ne pas inclure le moteur et l'équipement connexe ou le réservoir de carburant portatif)	Kg

NOTES

The rating of pontoon boats is to be in accordance with the Construction Standards for Small Vessels (TP 1332)

Illustrations/photos of the boat are required to be submitted showing
i) hull shape, and
ii) the occupant positions for all those persons to be carried.

NOTA

La classification des bateaux pontons doit se faire conformément aux *Normes de construction des petits bateaux* (TP 1332).

Soumettre des illustrations ou des photos du bateau indiquant :
i) la forme de la coque,
ii) la disposition des espaces pour les occupants.

Signature of Applicant - Signature du demandeur	Date

Canada

Canadian Coast Guard Garde côtière canadienne

APPLICATION FOR INFLATABLE BOAT CAPACITY PLATE
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION PNEUMATIQUE

PRINT YOUR NAME AND MAILING ADDRESS IN BOX BELOW
DANS LE CADRE CI-DESSOUS, ÉCRIVEZ VOTRE NOM ET VOTRE ADRESSE EN LETTRES MOULÉES

Telephone/Téléphone Facsimile/Télécopieur

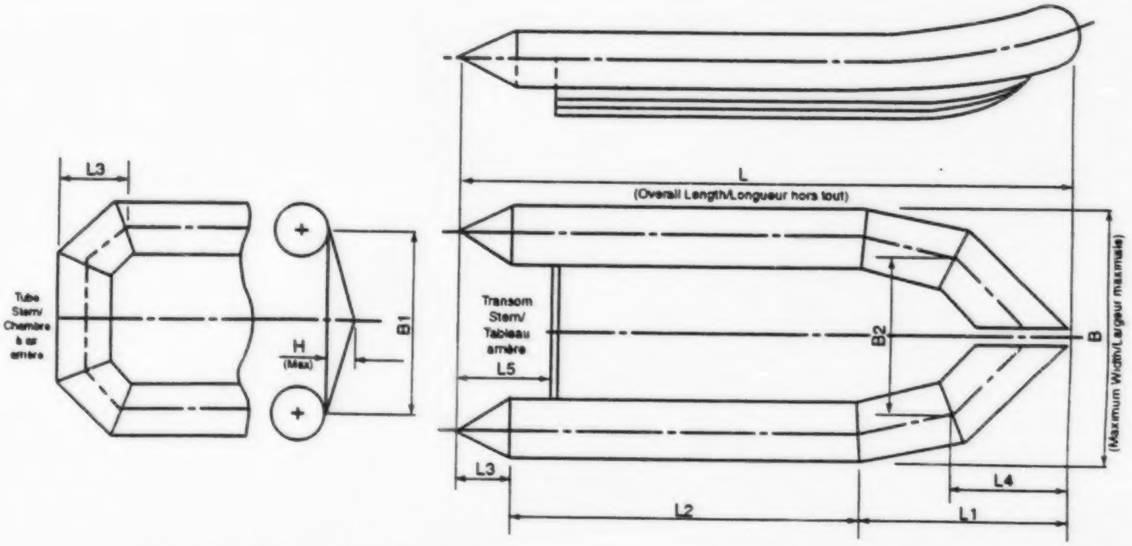
ALL MEASUREMENTS TO BE IN MILLIMETRES

TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

It is necessary that the following information be provided when applying for a capacity plate for inflatable boats.

Fournir tous les renseignements pour obtenir une plaque de capacité pour embarcation pneumatique.

Name/Model Number - Nom/numéro du modèle



ALL MEASUREMENTS TO BE IN MILLIMETRES - TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

LENGTH - LONGUEUR

L	L1	L2	L3	L4	L5
mm	mm	mm	mm	mm	mm

WIDTH - LARGEUR

B	B1	B2	H (max)	Average Diameter of Tube Collar Diamètre moyen de la chambre pneumatique	D
mm	mm	mm	mm		mm

Weight of boat in kilograms (Do not include engine and equipment or portable fuel tank) Le poids du bateau en kilogrammes (ne pas inclure le moteur et l'équipement connexe, ou le résevoir à carburant portatif)	W Kg

Stern Type - Type d'arrière		Bottom - Fond		Collar - Collier		Steering - Gouvernail		Forward of/ Avant de L/4
Transom À tableau	Tube À chambre	Soft Souple	Rigid Rigide	Inflatable Pneumatique	Rigid Rigide	Tiller Barre franche	Remote À distance	

Number of buoyancy chambers Nombre de chambres de flottaison	

Illustrations/Photos of the boat are required to be submitted showing:
i) hull shape and
ii) the occupant positions for all those persons to be carried

Soumettre des illustrations ou des photos du bateau montrant :
i) la forme de la coque,
ii) la disposition des espaces pour les occupants.

Signature of Applicant - Signature du demandeur	Date

Canada

Fisheries and Oceans Canada — Pêches et Océans Canada

Coast Guard — Garde côtière

CAPACITY PLATE ORDER FORM/
BON DE COMMANDE POUR LES PLAQUES DE CAPACITÉ

FORWARD ORDERS AND PAYMENTS TO / ENVOYER LES BONS DE COMMANDE ET LES PAIEMENTS À :

Rescue, Safety and Environmental Response, Office of Boating Safety (#5041),
Centennial Tower, 5th Floor, 200 Kent Street, Ottawa, Ontario, K1A 0E6
Telephone: (613) 991-3128, Facsimile: (613) 996-8902
Sauvetage, sécurité et intervention environnementale, Bureau de la sécurité nautique (nº 5041)
Tours Centennial, 5e étage, 200, rue Kent, Ottawa (Ontario) K1A 0E6
Téléphone : (613) 991-3128, Télécopieur : (613) 996-8902

COMPANY/ENTREPRISE ______________________________

ADDRESS/ADRESSE ______________________________

TELEPHONE/TÉLÉPHONE ______________ FACSIMILE/TÉLÉCOPIEUR ______________

ORDERED BY/COMMANDÉ PAR ______________________________

Please supply plates for model(s) listed below./Veuillez me faire parvenir des plaques pour chacun des modèles de bateau ci-dessous.

			FOR CCG USE ONLY RÉSERVÉ À LA GCC
Model name Nom du modèle	Model number N° du modèle	Quantity Quantité	Starting and ending plate number Premier et dernier numéros de la plaque
			From - To De - À
			From - To De - À
			From - To De - À
			From - To De - À
			From - To De - À
			From - To De - À

These vessels are listed on my Statutory Declaration dated ______________ (year/month/day). I enclose a cheque or Money order in the amount of $ __________ (Canadian funds only) payable to the Receiver General for Canada.

Une liste de ces modèles figure dans ma déclaration statutaire du ______________ (année/mois/jour). Vous trouverez ci-joint un chèque ou un mandat de ________ $ (argent canadien seulement) payable à l'ordre du Receveur général du Canada.

DATE ______________________ SIGNATURE ______________________
year/month/day-annee/mois/jour

Canada

Fisheries and Oceans Canada | Pêches et Océans Canada

Coast Guard | Garde côtière

CONFORMITY PLATE ORDER FORM/ BON DE COMMANDE POUR LES PLAQUES DE CONFORMITÉ

FORWARD ORDERS AND PAYMENTS TO / ENVOYER LES BONS DE COMMANDE ET LES PAIEMENTS À :

Rescue, Safety and Environmental Response, Office of Boating Safety (#5041),
Centennial Tower, 5th Floor, 200 Kent Street, Ottawa, Ontario, K1A 0E6
Telephone: (613) 991-3128, Facsimile: (613) 996-8902
Sauvetage, sécurité et intervention environnementale, Bureau de la sécurité nautique (nº 5041)
Tours Centennial, 5e étage, 200, rue Kent, Ottawa (Ontario) K1A 0E6
Téléphone : (613) 991-3128, Télécopieur : (613) 996-8902

COMPANY/ENTREPRISE ______________________________

ADDRESS/ADRESSE ______________________________

TELEPHONE/TÉLÉPHONE ____________________ FACSIMILE/TÉLÉCOPIEUR ____________________

ORDERED BY/COMMANDÉ PAR ______________________________

Please supply plates for model(s) listed below./Veuillez me faire parvenir des plaques pour chacun des modèles de bateau ci-dessous.

			FOR CCG USE ONLY RÉSERVÉ À LA GCC
Model name Nom du modèle	Model number Nº du modèle	Quantity Quantité	Starting and ending plate number Premier et dernier numéros de la plaque
			From - To De - À
			From - To De - À
			From - To De - À
			From - To De - À
			From - To De - À
			From - To De - À

These vessels are listed on my Statutory Declaration dated ____________________ (year/month/day). I enclose a cheque or Money order in the amount of $ __________ (Canadian funds only) payable to the Receiver General for Canada.

Une liste de ces modèles figure dans ma déclaration statutaire du ____________________ (année/mois/jour). Vous trouverez ci-joint un chèque ou un mandat de ________ $ (argent canadien seulement) payable à l'ordre du Receveur général du Canada.

DATE ____________________ SIGNATURE ____________________
year/month/day–année/mois/jour

Canada

Construction Standards for Small Vessels

Appendix B:
Process and Forms for Boat Owners and Brokers of Second-hand Boats

for all Pleasure Craft capable of being fitted with an engine

ISSUE NUMBER:	**1**
DATED:	**1ST April 1999**
NUMBER OF PAGES:	**6**

THIS ISSUE SUPERSEDES:

Issue number:	0
Dated:	0
Number of pages:	0

PLEASURE CRAFT SAFETY PLATE COMPLIANCE PROCESS FOR BOAT OWNERS AND BROKERS OF SECOND-HAND BOATS

(for all Pleasure Craft capable of being fitted with an engine)

SINGLE VESSEL PLATES are issued to Boat Owners and Brokers of Second Hand Boats, for HOMEBUILT Boats and Boats where the manufacturer is unable to issue a plate, for boats that are Pleasure Craft capable of being fitted with an engine. This plate confirms that to the best of the applicant's knowledge the craft is constructed in accordance with the Construction Standards.

the attached INFORMATION KIT includes:

Construction Standards for Small Vessels TP 1332, Single Vessel Data Sheet and Application for Capacity Plate Form

The following items and information are to be returned to Office of Boating Safety (OBS) for processing:

1. The SINGLE VESSEL DATA SHEET with overall details of the model to be issued with a plate.

2. PHOTOGRAPHS/illustrations of the craft showing the overall hull shape and style and also the seating layout.

3. The COST of the plate ($5.00 Canadian each plate) (prepaid)

and in addition, for those Pleasure Craft, **up to and including 6 metres (20 feet) in length** that are capable of being fitted with an engine of 7.5 kW (10 hp) or more:

4. APPLICATION FOR CAPACITY PLATE FORM. The details from this form will be used in the calculations to determine the recommended maximums for load, and people, and also engine power for outboard powered boats, and the results will then be printed on the Single Vessel Plate.

At least thirty (30) working days should be allowed from the processing of applications upon receipt in this office. A unique serial number and hull identification number are issued for each plate.

SINGLE VESSEL DATA SHEET / FEUILLE DE DONNÉES POUR BATEAU HORS SÉRIE

Homebuilt boats and boats where the manufacturer is unable to provide a plate
Bateaux hors série et bateaux dont le fabricant ne peut fournir une plaque

Name of owner / nom du propriétaire ______________________
Address of owner / adresse du propriétaire ______________________
Telephone/téléphone ______________ Facsimile/facsimilé ______________
Name of boat (if applicable)/
Nom du bateau (si applicable) ______________________
Name of builder or importer (if known)/
Nom du fabricant ou importateur (si connu) ______________________
Length of boat (in metres) / longueur du bateau (en mètres) ______________
Width(beam) of boat (in metres) / largeur du bateau (en mètres) ______________
Transom height (in metres) / hauteur du tableau (en mètres) ______________
(if applicable / si applicable)
Transom width (in metres) / largeur du tableau (en mètres) ______________
(if applicable / si applicable)

Classification codes (to be checked off) / Codes de classification (cocher ce qui convient)

	BOAT TYPES (1) TYPES DE BATEAU (1)			HULL MATERIAL (2) MATÉRIAU DE COQUE (2)			HULL FORM (3) FORME DE LA COQUE (3)	
101	Runabout « Runabout »		201	Fibreglass - glassreinforced plastic Fibre de verre, plastique renforcé de verre		301	Flat bottom/ Coque à fond plat	
102	Bowrider « Bowrider »		202	Aluminum/Aluminium		302	Round bottom/ Coque à fond arrondi	
103	Race/performance/ Bateau de course		203	Steel/Acier		303	Vee bottom/ Coque à fond en V	
104	Cruiser/ Bateau de croisière		204	Wood/Bois		304	Modified vee/ Coque à fond en V modifié	
105	Sport fisherman/ Bateau de pêche sportive		205	Ferro cement/Ferrociment		305	Deep vee/ Coque à fond en V profond	
106	Bass boat/« Bass boat »					306	Tunnel hull/Coque tunnel	
107	Jon boat/« Jon boat »					307	Tri-hull/Coque trimaran	
109	Inflatable/ Embarcation pneumatique					308	Cathedral hull/ Coque cathédrale	
110	Sail only/ Bateau à voile seulement					309	Catamaran/ Coque catamaran	
111	Sail auxiliary/ Bateau à voile auxiliaire					310	Displacement hull/ Coque à déplacement	
112	Houseboat/Bateau-logement					311	Pontoon/Coque ponton	
113	Pontoon/Ponton							
120	Other: specify Autre : préciser		220	Other: specify/ Autre : préciser		320	Other: specify/ Autre : préciser	

	ENGINE/MOTEUR (4)	
401	Inboard gasoline/ Moteur en-bord à essence	
402	Inboard diesel/ Moteur en-bord à combustion diesel	
403	Inboard LPG/CNG/ Moteur en-bord à gaz liquéfié ou à gaz naturel comprimé	
404	Outboard, no motor well/ Moteur hors-bord sans puits à moteur	
405	Outboard with motor well/ Moteur hors-bord avec puits à moteur	
406 G	Inboard/outboard gasoline Moteur en-bord/hors-bord à essence	
406 D	Inboard/outboard diesel/ Moteur en-bord/hors-bord à combustible diesel	
407	Sail drive/Propulsion à voile	
408	Electric/Propulsion électrique	
409	Jet drive/Propulsion à réaction	
410	Air drive/Propulsion à air	
420	Other: specify/Autre : préciser	

	STEERING /COMMANDE (5)	
501	Remote fwd of midships/ À distance, à l'avant du milieu	
502	Remote aft of midships/ À distance, à l'arrière du milieu	
503	Outboard tiller arm/ Bras du gouvernail à l'extérieur	
504	Rudder and tiller/ Gouvernail et barre de gouvernail	
505	Rudder and wheel/ Gouvernail et volant	
506	Other: specify Autre : préciser	

Canadian Coast Guard Garde côtière canadienne

APPLICATION FOR BOAT CAPACITY PLATE (MONOHULLS)
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION (MONOCOQUE)

INSTRUCTIONS

Fill in the measurements and other information required in this form and mail to the address below together with photos/illustrations and the prescribed fee for each plate.

DO NOT SEND CASH.

(WHERE A NUMBER OF PLATES FOR BOATS OF IDENTICAL HULL DIMENSIONS ARE REQUIRED, ONE APPLICATION WILL SUFFICE FOR ALL.)

The purpose of this form is to obtain a series of measurements from which the Department can make calculations to determine the volume of your boat below the Static Float Plane, from which safe load capacity and engine power can be calculated.

The measurements required are the length, widths, and a series of vertical depths at different parts of your boat.

In the centre portion is a series of sketches – check one that looks like your boat. It is not possible to depict all types and if you cannot find one that seems to resemble your boat, describe it in your own words or attach any literature you may have that describes the boat.

Below the sketches is a section dealing with the hull shape. This has a bearing on the ratings selected, and the first question asks whether the boat has a flat bottom, a hard chine or vee bottom, a round bilge or round bottom or a cathedral-type hull. Pick the one that describes your boat closely at the mid-length. The next question asks for the NUMBER OF OCCUPANT POSITIONS. If your craft HAS a motor well, insert the dimensions in the next box. The last question asks whether or not your boat has a steering wheel and motor controls and if they are located forward of Section 'C'; these conditions have considerable bearing on the way a boat handles under power, and on the recommended maximum engine power.

If further information is required, or to return the documents, please use the address below:

Office of Boating Safety (#5041)
Canadian Coast Guard
200 Kent Street, 5h Floor, Centennial Towers
Ottawa, Ontario K1A OE6
CANADA
Tel.: (613) 991-3127; 991-3128
Fax: (613) 996-8902

Donnez toutes les mesures et les autres renseignements demandés dans le présent formulaire, et expédiez le tout par la poste à l'adresse ci-dessous, en incluant les photos/illustrations et le droit prescrit pour chaque plaque requise.

N'ENVOYEZ PAS D'ARGENT COMPTANT.

(SI VOUS AVEZ BESOIN D'UN CERTAIN NOMBRE DE PLAQUES POUR DES EMBARCATIONS DONT LA COQUE POSSÈDE DES DIMENSIONS IDENTIQUES, UNE SEULE DEMANDE SUFFIRA.)

Le présent formulaire vise à recueillir un certain nombre de mesures dont se servira le Ministère pour faire les calculs qui lui permettront de déterminer le volume de votre embarcation sous le plan de flottaison statique, et de recommander la charge brute et la puissance qui lui conviennent.

Les mesures demandées sont la longueur, les largeurs et une gamme de hauteurs mesurées à différents points de votre embarcation.

La partie centrale du formulaire comprend une série de croquis parmi lesquels vous choisirez celui qui ressemble à votre embarcation. Il n'est pas possible de représenter tous les types d'embarcation, et si aucun des croquis ne ressemble à votre embarcation, faites la description de celle-ci en vos propres termes ou joignez toute description que vous pourriez posséder.

L'espace réservé aux croquis est suivi d'une section relative à la forme de la coque. Celle-ci situe votre embarcation dans l'une ou l'autre des catégories établies. C'est pourquoi on vous demande d'abord si votre embarcation est à fond plat, à bouchains vifs ou à fond en « V », à bouchains, à fond arrondi ou de type cathédrale. Cochez la réponse qui correspond le plus à votre embarcation à mi-longueur. ON VOUS DEMANDE ENSUITE LE NOMBRE DE PLACES POUR LES OCCUPANTS. Si votre embarcation est dotée d'un puits à moteur, inscrivez les dimensions de ce dernier dans la case suivante. On vous demande enfin si votre embarcation est munie d'un volant et de commandes de moteur et s'ils sont situés en avant de la section « C ». Cela a une importance énorme sur la conduite d'une embarcation à moteur en marche et sur la puissance motrice maximale qui sera recommandée.

Si vous avez besoin de renseignements additionnels, ou pour acheminer les documents, adressez-vous au :

Bureau de la sécurité nautique (nº 5041)
Garde côtière canadienne
200, rue Kent, 5e étage, Tours Centennial
Ottawa (Ontario) K1A OE6
CANADA
Tél. : (613) 991-3127 ou 991-3128
Fax : (613) 996-8902

Canada

Canadian Coast Guard Garde côtière canadienne

APPLICATION FOR BOAT CAPACITY PLATE (MONOHULLS)
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION (MONOCOQUE)

SUGGESTED METHOD OF OBTAINING MEASUREMENTS

To start, make sure your boat is on, or over, a level surface and on an even keel so that the Static Float Plane (S.F.P.) is horizontal. Now follow these simple steps to obtain the necessary measurements:

1) Measure the height of the S.F.P. from the ground.

2) Measure off the Calculation Length and enter it on the form.

3) Mark the Calculation Length on the ground with string, chalk or some similar method, making sure it is beneath and in line with the centre of the boat.

4) Divide the Calculation Length into four sections - A, B, C and D in the diagram - and then divide the forward quarter in half to obtain section AA.

5) From each of these points mark off a line at ninety degrees to the centre line out past the edge of the boat on one side.

6) Drop a line straight down S.F.P. at the side to each of the lines in 5). These points on the ground at each section back to the centre line will give you your half width at each section.

7) Now divide each of these half widths into five equal lengths thus providing points a, b, c, d, e and f as shown in the diagrams.

8) From each of the points in 7) measure upward to the hull and subtract that measurement from the figure you obtained in 1). This will give you the depth required for capacity calculations.

9) Enter the figures on the form and repeat the process for each section.

SHOULD YOU FIND IT EASIER TO MEASURE THE ACTUAL INSIDE, OF THE BOAT, BEAR IN MIND THAT MEASUREMENTS ARE TO THE OUTSIDE OF THE HULL BUT DO NOT INCLUDE RUBBERS, FENDERS, OR SPRAY RAILS.

If you experience difficulty in obtaining the required measurements of your boat, you may obtain advice by telephoning or writing to the Office of Boating Safety, Canadian Coast Guard, Ottawa.

DEFINITIONS

Static Float Plane

With the boat on even keel, the Static Float Plane is the plane parallel to the keel which is below the lowest point on the boat at which water can enter the hull. It is below which all measurements are taken.

Calculation Length

The length measured parallel to the Static Float Plane, from the foremost part of the boat to the midpoint of the transom below the Static Float Plane.

Transverse Sections (SA, AA, A, B, C, & D)

Are established at the quarter lengths and at the midpoints of the forward quarter which, with the exception of the transom, are perpendicular to the Static Float Plane.

Vertical Depths (a, b, c, d, e & f)

Are established below the Static Float Plane in each transverse section at five equidistant intervals between the boat's longitudinal centreline and the extreme hull width below the Static Float Plane.

MÉTHODE SUGGÉRÉE POUR OBTENIR LES MESURES

Prenez soin tout d'abord de placer votre embarcation sur ou au-dessous d'une surface plane de façon à ce que la hauteur entre l'avant et l'arrière soit la même et que le plan de flottaison statique (PFS) soit horizontal. Afin d'obtenir les mesures nécessaires, suivez les étapes décrites ci-après :

1) Mesurez la distance séparant le PFS du sol.

2) Mesurez la longueur de calcul et inscrivez-la sur le formulaire.

3) Tracez sur le sol une ligne correspondant à la longueur de calcul à l'aide d'une ficelle, d'une craie ou de tout autre moyen du genre, parallèlement à l'axe longitudinal de l'embarcation.

4) Divisez la ligne tracée sur le sol en quatre parties égales, A, B, C et D, sur le schéma, puis divisez également le premier quart en deux parties de façon à obtenir la partie AA.

5) À partir de chacun de ces points, dessinez une ligne à angle droit par rapport à l'axe longitudinal, dépassant la largeur de l'embarcation sur un côté.

6) Laissez tomber un fil à plomb à partir du PFS jusqu'à chacune des lignes mentionnées en 5). La distance séparant le point d'intersection et l'axe longitudinal de chacune des parties correspond à la moitié de la largeur de chaque section.

7) Divisez ensuite chacune des demi-largeurs en cinq parties égales délimitées par a, b, c, d, e et f, telles qu'illustrées sur les schémas.

8) Mesurez la distance séparant chacun des points mentionnés en 7) de la coque et soustrayez cette dimension du chiffre obtenu en 1). La différence correspond à la profondeur nécessaire aux calculs de capacité.

9) Inscrivez les données obtenues sur le formulaire et répétez le processus pour chacune des parties.

SI VOUS ESTIMEZ PLUS FACILE DE CALCULER LES DIMENSIONS INTÉRIEURES RÉELLES DE VOTRE EMBARCATION, N'OUBLIEZ PAS QUE TOUTES LES MESURES DOIVENT ENGLOBER L'ÉPAISSEUR DE LA COQUE MAIS EXCLURE LES LISTONS, LES DÉFENSES ET LES RAMBARDES.

Si vous avez de la difficulté à établir les mesures requises, vous pouvez obtenir des conseils en téléphonant ou en écrivant au Bureau de la sécurité nautique de la Garde côtière canadienne, à Ottawa.

DÉFINITIONS

Plan de flottaison statique

Lorsque le bateau est sans assiette, le plan de flottaison statique est un plan tracé parallèlement à la quille qui est en-dessous du point le plus bas où l'eau peut entrer dans la coque. Toutes les mesures sont calculées en-dessous de ce plan.

Longueur de calcul

Longueur mesurée parallèlement au plan de flottaison statique depuis la partie la plus avant du bateau jusqu'à mi-distance du tableau sous le plan de flottaison statique.

Sections transversales (SA, AA, A, B, C, et D)

Les sections transversales sont établies aux quarts de la longueur et au point centre du quart avant qui, à l'exception du tableau, sont perpendiculaires au plan de flottaison statique.

Profondeurs (a, b, c, d, e et f)

Les profondeurs sont établies sous le plan de flottaison statique dans chacune des sections transversales, à cinq intervalles équidistants entre l'axe longitudinal de l'embarcation et la largeur extrême de la coque sous le plan de flottaison statique.

Canada

INSTRUCTIONS FOR TAKING MEASUREMENTS (MONO-HULL BOATS)
INSTRUCTIONS POUR OBTENIR LES DIMENSIONS POUR EMBARCATION (MONO-COQUES)

To start, make sure your boat is on or over a level surface and the gunwale or S.F.P. (static floatplane, see diagram) is horizontal. Take all the necessary precautions to ensure the vessel is stable and will not move while you are taking your measurements. (Note: all measurements to be in millimetres)

1.) Measure the length of your vessel's hull. Enter that length here ______. This length will be called "Calculation Length". (See diagram 1, step 1). Enter the Calculation Length in diagram 3.

2.) Mark the "Calculation Length" on the ground with string, chalk, or some other similar method, making sure it is beneath and in line with the centre of the boat (along the keel).

3.) Measure the distance from the gunwale to the ground at the vessel midpoint. (See diagram 1). Enter that distance here _______.

4.) Measure the distance from the keel at the centreline to the ground (see diagram 1). Enter that distance here. ______.

5.) Subtract 4.) From 3.) And enter that height here ________. This height will be called dimension "**f**". (See diagram 1).

6.) Divide the "Calculation Length into four equal sections (Calculation Length / 4 = ______) and mark these points on the line.

In the next step we are going to label these points and use this to find the points where the hull is measured.

Please look at diagram 2 now and observe how the diagram is labelled. You will notice the "sections" you divided in step 6 are marked, from the

Prenez soin tout d'abord de placer votre embarcation sur ou au-dessus d'une surface plane de sorte que le plat-bord ou le plan de flottaison statique (PFS) soit horizontal. Assurez-vous de prendre les mesures nécessaires afin que l'embarcation soit stable au moment où vous prendrez les mesures. (NOTE : Toutes les mesures doivent être en millimètres).

1) Mesurez la longueur de la coque de votre embarcation. Inscrivez la longueur ici : ____. Cette longueur se nomme « la longueur de calcul ». (Voir le schéma 1, étape 1.) Inscrivez la longueur de calcul dans le schéma 3.

2) Tracez la longueur de calcul sur le sol avec une ficelle, une craie ou toute autre méthode similaire en vous assurant qu'elle est alignée sous le centre de l'embarcation (d'un bout à l'autre de la quille).

3) Mesurez la distance à partir du plat-bord jusqu'au sol, au milieu de l'embarcation (voir le schéma 1). Inscrivez la distance ici : _____.

4) Mesurez la distance entre l'axe longitudinal de la quille et le sol (voir le schéma 1.) Inscrivez la distance ici : _____.

5) Soustrayez la distance obtenue au point 4 de celle du point 3 et inscrivez le résultat de la hauteur ici : ____. Cette hauteur s'appelle la dimension « **F** » (voir le schéma 1).

6) Divisez la « longueur de calcul » en quatre parties égales (L de C / 4 = _____), et indiquez ces points sur la ligne.

À la prochaine étape, nous marquerons ces points et les utiliserons pour repérer les points qui servent à mesurer la coque.

Regardez le schéma 2 maintenant, et observez comment il est étiqueté. Vous remarquerez que les « sections » divisées à l'étape 6 sont indiquées du tableau (poupe) à la proue (avant) comme suit : D, C, B, A, puis AA et SA. La section AA correspond à la section « A » divisée en deux.

INSTRUCTIONS FOR TAKING MEASUREMENTS (MONO-HULL BOATS)
INSTRUCTIONS POUR OBTENIR LES DIMENSIONS POUR EMBARCATION (MONO-COQUES)

transom (stern) forward D, C, B, A, then AA & SA. The mark "AA" is found by dividing the section "A" in half.

Take the number found in step 6.) Divide by 2 (_____/2 =_____ mark this point AA on the line you drew in step 2.

The mark "SA" is only used for boats with a square bow.

7.) From each of these points (AA, A, B, C, D (and SA if it applies)) mark off a line at ninety degrees to the centreline (calculation length) out just past the edge of the boat on one side. If your boat has a square bow, label and follow the guidelines for the other points (see diagram 2) and mark "SA". Again, these lines will be used to find the points on the hull to measure heights from the ground. Please refer to diagram 2.

8.) From the side of the boat that has the lines below it, drop a line straight down from the hull over each point AA, A, B, C, & D (do not use the edge of a spray rail, rubbing rails or lips). Mark that spot on each section line (AA, A, B, C, & D). This will give you an outline of the shape of your hull at each section.

9.) On line AA, measure the distance from the centreline to the point marked AA. Enter that distance here _____. This distance is called "Half Width at AA". Enter this length in diagram 3.

10.) On line A, measure the distance from the centreline to the point marked A. Enter that distance here ____. This distance is called " Half Width at A". Enter this length in diagram 3.

11.) On line B, measure the distance from the centreline to the point marked B. Enter that distance here _____. This distance is called " Half Width at B".

Prenez le chiffre obtenu à l'étape 6, et divisez-le par 2 (_____/2=_____). Indiquez le résultat « AA » sur la ligne tracée à l'étape 2.

La section « SA » est seulement utilisée pour les embarcations à proue carrée.

7) À tous les points (AA, A, B, C, D (et SA si applicable)), tracez une ligne perpendiculaire à l'axe du bateau (longueur de calcul) excédant légèrement un côté de l'embarcation. Si votre embarcation a une proue carrée, indiquez-le en inscrivant SA et suivez la même procédure que pour les autres points (voir le schéma 2). N'oubliez pas que ces lignes seront utilisées afin de trouver les points, sur la coque, pour mesurer la hauteur à partir du sol. Veuillez vous reporter au schéma 2.

8) Du côté de l'embarcation sous lequel les lignes se trouvent, tracez une ligne directe partant de la coque vers tous les points (AA, A, B, C et D). N'utilisez pas les côtés de l'embrun, de la ceinture ou des lèvres. Indiquez cette position à chaque section de la ligne (AA, A, B, C et D). Cela vous donnera un aperçu de la forme de votre coque à chaque section.

9) À la ligne AA, mesurez la distance entre l'axe du bateau et le point AA. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur AA ». Inscrivez-la au schéma 3.

10) À la ligne A, mesurez la distance entre l'axe du bateau et le point A. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur A ». Inscrivez-la au schéma 3.

11) À la ligne B, mesurez la distance entre l'axe du bateau et le point B. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur B ». Inscrivez-la au schéma 3.

INSTRUCTIONS FOR TAKING MEASUREMENTS (MONO-HULL BOATS)
INSTRUCTIONS POUR OBTENIR LES DIMENSIONS POUR EMBARCATION (MONO-COQUES)

Enter this length in diagram 3.

12.) On line C, measure the distance from the centreline to the point marked C. Enter that distance here _____. This distance is called " Half Width at C". Enter this length in diagram 3.

13.) On line D, measure the distance from the centreline to the point marked D. Enter that distance here _____. This distance is called " Half Width at D". Enter this length in diagram 3.

14.) If you have a square bow on line SA, measure the distance from the centreline to the point marked SA. Enter that distance here _____. This distance is called " Half Width at SA". Enter this length in diagram 3.

15.) Now divide the lines AA, A, B, C, & D each by five and mark those lengths on each line. Label each one of those marks "a, b, c, d, e, & f" from the outside towards the centreline (see diagram 3).

16.) From each of the points in 15.) Marked a, b, c, d, e, & f measure upward to the hull and enter the distances below.

(AA) a____ b____ c____ d____ e____ f____

(A) a____ b____ c____ d____ e____ f____

(B) a____ b____ c____ d____ e____ f____

(C) a____ b____ c____ d____ e____ f____

(D) a____ b____ c____ d____ e____ f____

17.) With each of the measurements found above; subtract the measurement found in step 4.) And enter that length in diagram 3.)

12) À la ligne C, mesurez la distance entre l'axe du bateau et le point C. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur C ». Inscrivez-la au schéma 3.

13) À la ligne D, mesurez la distance entre l'axe du bateau et le point D. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur D ». Inscrivez-la au schéma 3.

14) Si vous avez une proue carrée, à la ligne SA, mesurez la distance entre l'axe du bateau et le point SA. Inscrivez cette distance ici : _______. Cette distance est nommée « mi-largeur SA ». Inscrivez-la au schéma 3.

15) Maintenant, divisez chaque ligne AA, A, B, C et D par cinq et inscrivez ces longueurs sur chaque ligne. Nommez chacun de ces points « a, b, c, d, e et f » de l'extérieur vers l'axe du bateau (voir le schéma 3).

16) À partir des points obtenus à l'étape 15, inscrivez les mesures a, b, c, d, e et f vers le haut de la coque et indiquez les distances ci-dessous.

(AA) a b c d e f

(A) a ____ b ____ c ____ d ____ e ____ f ____

(B) a ____ b ____ c ____ d ____ e ____ f ____

(C) a ____ b ____ c ____ d ____ e ____ f ____

(D) a ____ b ____ c ____ d ____ e ____ f ____

17) Prenez chaque mesure trouvée ci-haut, et soustrayez la mesure trouvée à l'étape 4. Inscrivez la longueur au schéma 3.

Fisheries and Oceans Canada | Pêches et Océans Canada

Coast Guard | Garde côtière

APPLICATION FOR BOAT CAPACITY PLATE (MONOHULLS)
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION (MONOCOQUE)

PRINT YOUR NAME AND MAILING ADDRESS IN BOX BELOW
DANS LE CADRE CI-DESSOUS, ÉCRIVEZ VOTRE NOM ET VOTRE ADRESSE EN LETTRES MOULÉES

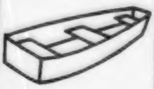
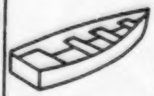
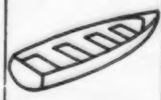
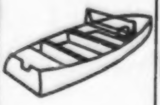
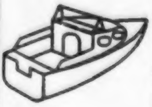
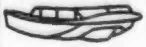
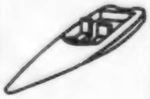
Telephone/Téléphone
Facsimile/Télécopieur

ALL MEASUREMENTS TO BE IN MILLIMETRES

TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

Model of Boat - Modèle d'embarcation (if applicable/s'il y a lieu)	Manufacturer's name or if homebuilt - Nom du fabricant ou construction domestique
Year built and manufacturer's identification code (if applicable) Année de construction et code d'identification du fabricant (s'il y a lieu)	

CHECK THE SKETCH WHICH MOST CLOSELY RESEMBLES YOUR BOAT
PARMI LES CROQUIS CI-DESSOUS, CHOISISSEZ CELUI QUI RESSEMBLE LE PLUS À VOTRE EMBARCATION

 ☐	 ☐	 ☐	 ☐	 ☐	 ☐	 ☐

BOTTOM CONTOUR - FOND

☐ Is your boat flat bottom?
Votre embarcation est-elle à fond plat?

☐ Hard chine or V bottom?
À bouchains vifs ou à fond en « V »?

☐ Round bilge or round bottom?
À bouchains ou à fond arrondi?

☐ Cathedral type?
Style cathédral?

Number of permanent occupant positions on board

Nombre de places permanentes pour les occupants à bord

☐

MOTOR WELL dimensions
Dimensions du PUITS À MOTEUR

Length / Longueur ☐

Breadth / Largeur ☐

Mean depth / Profondeur moyenne ☐

Does your boat have a steering wheel and motor control?
Votre embarcation est-elle munie d'un volant et de commandes de moteur?
☐ Yes / Oui
☐ No / Non

Steering control located forward of section C?
Commande de direction située en avant de la section C?
☐ Yes / Oui
☐ No / Non

Dry Weight of Boat in kilograms (Includes all permanent structure and deck, railings, console, cabin, seats.) Le poids sec du bateau en kilogrammes (incluant toute structure permanente et le pont, les garde-corps, la console, la cabine et les sièges.)	kg

Illustrations/photos of the boat are required to be submitted showing:
i) the hull shape, and
ii) inboard location for all those persons to be carried.

It is the responsibility of the boatbuilder and owner to ensure that the boat complies with the Canadian Coast Guard Construction Standards for Small Vessels.

Outboard motors mounted on the transom or transom brackets, are to be installed in such a way that their movement is not restricted by any part of the boat's structure and there is to be sufficient clearance between the boat's structure and the outboard motor in all positions that would allow for the free movement of a person's arm.

Soumettre des illustrations ou des photos de l'embarcation indiquant :
i) la forme de la coque;
ii) l'emplacement alloué pour toutes les personnes transportées à bord.

Il incombe au fabricant et au propriétaire de l'embarcation de s'assurer que celle-ci est conforme aux *Normes de construction des petits bateaux* de la Garde côtière canadienne.

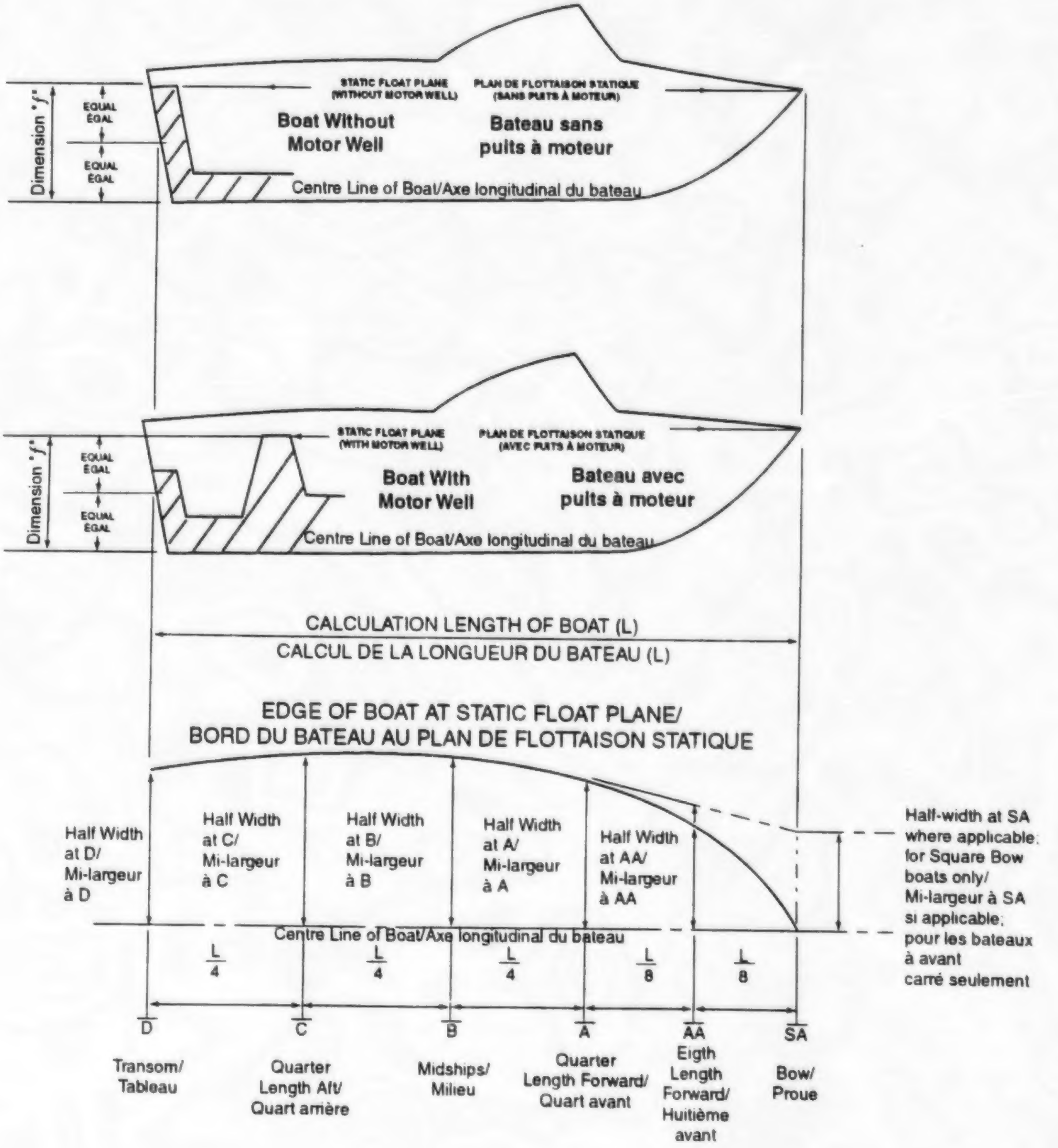
Les moteurs hors-bord montés sur le tableau ou sur des supports arrière doivent être installés de façon à ce qu'aucune partie de l'embarcation n'entrave leur mouvement. Il doit y avoir suffisamment de jeu entre la structure de l'embarcation et le moteur hors-bord, dans toutes les positions, pour qu'une personne puisse y passer librement le bras.

Canada

Fisheries and Oceans Canada
Coast Guard

Pêches et Océans Canada
Garde côtière

APPLICATION FOR BOAT CAPACITY PLATE (MONOHULLS)
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION (MONOCOQUE)


STATIC FLOAT PLANE (WITHOUT MOTOR WELL)
PLAN DE FLOTTAISON STATIQUE (SANS PUITS À MOTEUR)
Dimension "f"
EQUAL ÉGAL
EQUAL ÉGAL
Boat Without Motor Well
Bateau sans puits à moteur
Centre Line of Boat/Axe longitudinal du bateau
STATIC FLOAT PLANE (WITH MOTOR WELL)
PLAN DE FLOTTAISON STATIQUE (AVEC PUITS À MOTEUR)
Dimension "f"
EQUAL ÉGAL
EQUAL ÉGAL
Boat With Motor Well
Bateau avec puits à moteur
Centre Line of Boat/Axe longitudinal du bateau
CALCULATION LENGTH OF BOAT (L)
CALCUL DE LA LONGUEUR DU BATEAU (L)
EDGE OF BOAT AT STATIC FLOAT PLANE/
BORD DU BATEAU AU PLAN DE FLOTTAISON STATIQUE
Half Width at D/ Mi-largeur à D
Half Width at C/ Mi-largeur à C
Half Width at B/ Mi-largeur à B
Half Width at A/ Mi-largeur à A
Half Width at AA/ Mi-largeur à AA
Half-width at SA where applicable; for Square Bow boats only/ Mi-largeur à SA si applicable; pour les bateaux à avant carré seulement
Centre Line of Boat/Axe longitudinal du bateau
L/4
L/4
L/4
L/8
L/8
D
C
B
A
AA
SA
Transom/ Tableau
Quarter Length Aft/ Quart arrière
Midships/ Milieu
Quarter Length Forward/ Quart avant
Eigth Length Forward/ Huitième avant
Bow/ Proue

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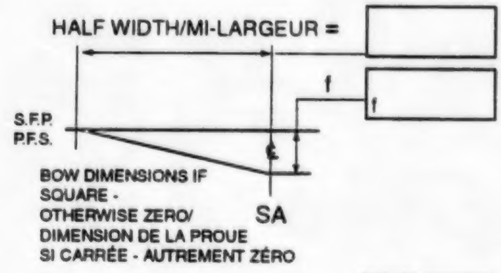
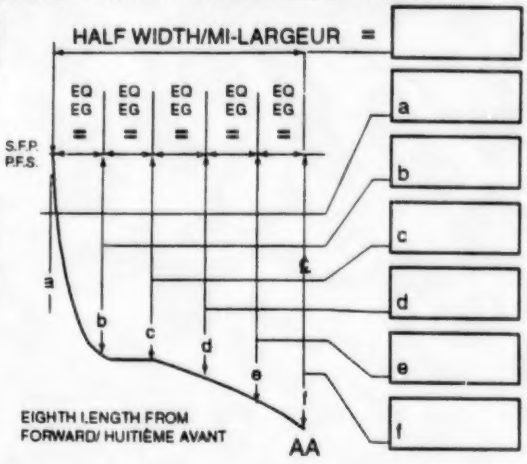
Coast Guard
Garde côtière

ALL MEASUREMENTS TO BE IN MILLIMETRES/TOUTES LES DIMENSIONS DOIVENT ÊTRE EN MILLIMÈTRES

CALCULATION LENGTH/ LONGUEUR DE CALCUL ☐


HALF WIDTH/MI-LARGEUR =
f
f
S.F.P.
P.F.S.
℄
SA

BOW DIMENSIONS IF SQUARE - OTHERWISE ZERO/ DIMENSION DE LA PROUE SI CARRÉE - AUTREMENT ZÉRO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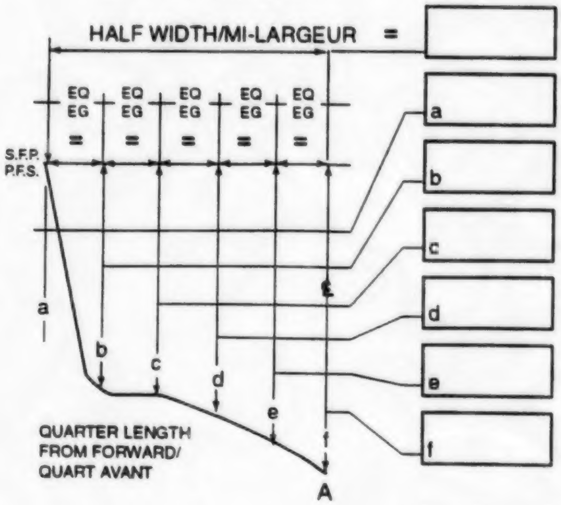
EIGHTH LENGTH FROM FORWARD/ HUITIÈME AVANT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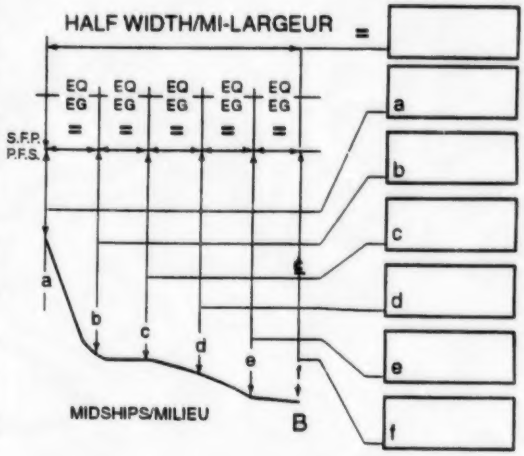
QUARTER LENGTH FROM FORWARD/ QUART AVANT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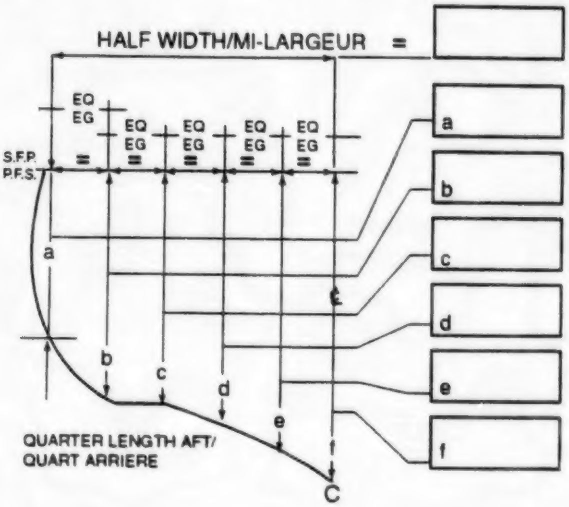
MIDSHIPS/MILIEU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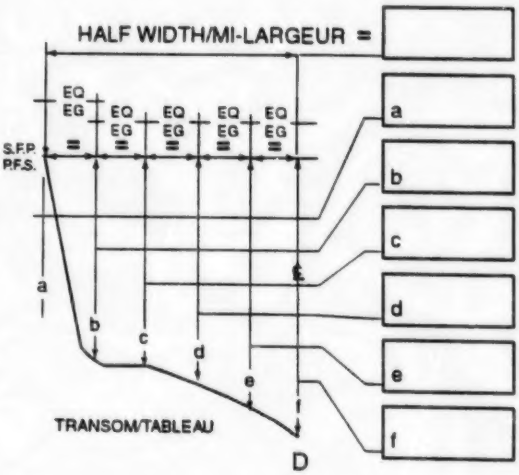
QUARTER LENGTH AFT/ QUART ARRIERE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e
f

TRANSOM/TABLEAU

NOTE: Dimension 'a' on half sections AA, A, B, C, and D, will be zero unless the hull topside down from the Static Float Plane is vertical or lays outward

NOTA : La dimension «a» aux sous-sections AA, A, B, C et D sera de zéro, à moins que la coque inversée depuis le plan de flottaison statique soit vertica ou qu'elle repose vers l'extérieur.

Canada

Canadian Coast Guard
Garde côtière canadienne

APPLICATION FOR MULTIHULL BOAT CAPACITY PLATE
DEMANDE DE PLAQUE DE CAPACITÉ POUR BATEAUX MULTICOQUE

PRINT YOUR NAME AND MAILING ADDRESS IN BOX BELOW
DANS LE CADRE CI-DESSOUS, ÉCRIVEZ VOTRE NOM ET VOTRE ADRESSE EN LETTRES MOULÉES

Telephone/Téléphone
Facsimile/Télécopieur

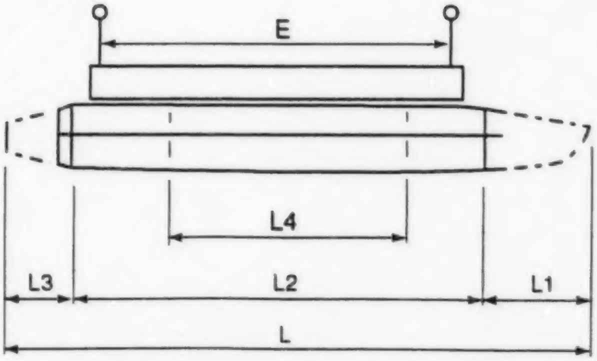
ALL MEASUREMENTS TO BE IN MILLIMETRES

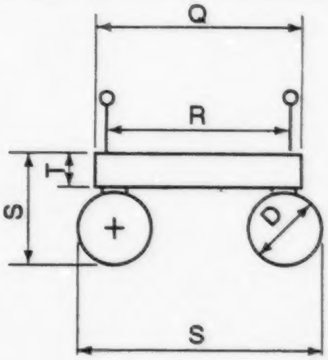
TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

It is necessary that the following information be provided when applying for a capacity plate for multihull boats.

Fournir tous les renseignements pour obtenir une plaque de capacité pour embarcation multicoque.

Name/Model Number - Nom/numéro du modèle





ALL MEASUREMENTS TO BE IN MILLIMETRES - TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

LENGTH - LONGUEUR

Overall - Hors tout	L mm	Irregular section forward (if any)- Partie avant de forme irrégulière (s'il y a lieu)	L1 mm	Parallel section - Partie parallèle	L2 mm
Irregular section aft (if any)- Partie arrière de forme irrégulière (s'il y a lieu)	L3 mm	Longest space between two watertight bulkheads in any part of the pontoon (that is not foam-filled.)		Espace le plus long entre deux cloisons étanches dans n'importe quelle partie du flotteur (qui n'est pas rempli de mousse)	L4 mm

WIDTH - LARGEUR

Maximum - Maximale	B mm	Diameter (external) (If pontoons are not circular in cross-section, use the diameter of the largest circle that can be inscribed in the pontoon)- Diamètre (extérieur) (Si les flotteurs ne sont pas circulaires, donner le diamètre du plus grand cercle qui pourrait être tracé à l'intérieur du flotteur)	D mm

DECK - PONT

Length between railings Longueur entre les garde-corps	E mm	Width overall Largeur hors tout	Q mm	Width between railings Largeur entre les garde-corps	R mm
Height above bottom of pontoons Hauteur à partir du fond des flotteurs	S mm	Depth Profondeur	T mm		

Dry Weight of boat in kilograms including: pontoons, deck, railings, console, cabin, seats and any other permanent structure or fittings (Do not include engine and equipment or portable fuel tank)- Le poids sec du bateau en kilogrammes, incluant les flotteurs, le pont, les garde-corps, la console, la cabine, les sièges et toute autre structure permanente ou accessoires (ne pas inclure le moteur et l'équipement connexe ou le réservoir de carburant portatif)	Kg

NOTES

The rating of pontoon boats is to be in accordance with the Construction Standards for Small Vessels (TP 1332)

Illustrations/photos of the boat are required to be submitted showing
i) hull shape, and
ii) the occupant positions for all those persons to be carried

NOTA

La classification des bateaux pontons doit se faire conformément aux *Normes de construction des petits bateaux* (TP 1332).

Soumettre des illustrations ou des photos du bateau indiquant :
i) la forme de la coque,
ii) la disposition des espaces pour les occupants.

Signature of Applicant - Signature du demandeur	Date

Canada

Canadian Coast Guard   Garde côtière canadienne

APPLICATION FOR INFLATABLE BOAT CAPACITY PLATE
DEMANDE DE PLAQUE DE CAPACITÉ POUR EMBARCATION PNEUMATIQUE

PRINT YOUR NAME AND MAILING ADDRESS IN BOX BELOW
DANS LE CADRE CI-DESSOUS, ÉCRIVEZ VOTRE NOM ET VOTRE ADRESSE EN LETTRES MOULÉES

Telephone/Téléphone   Facsimile/Télécopieur

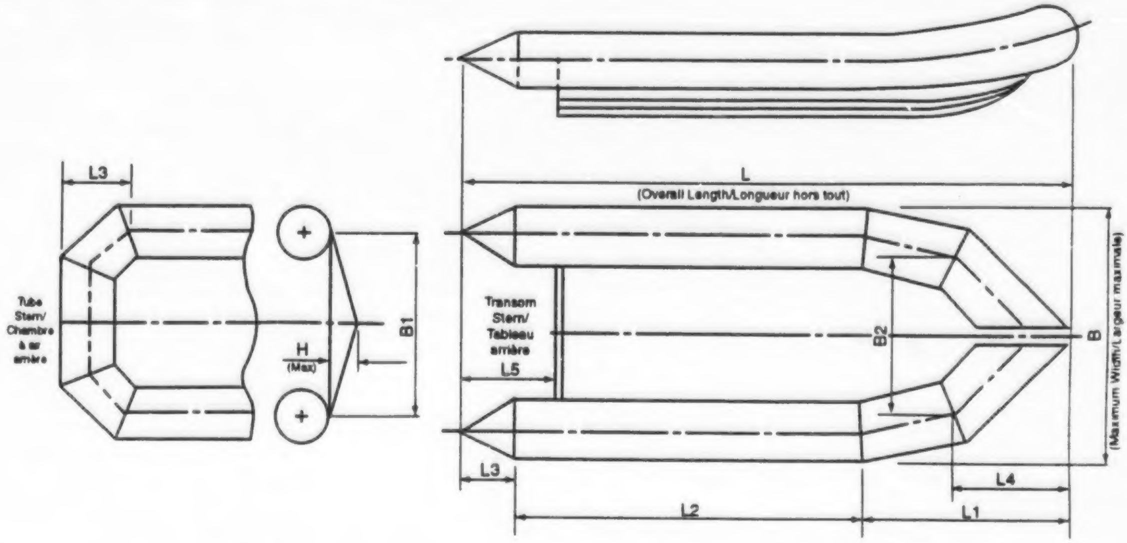
ALL MEASUREMENTS TO BE IN MILLIMETRES

TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

It is necessary that the following information be provided when applying for a capacity plate for inflatable boats.

Fournir tous les renseignements pour obtenir une plaque de capacité pour embarcation pneumatique.

Name/Model Number - Nom/numéro du modèle


L3
Tube Stern/ Chambre à air arrière
H (Max)
B1
Transom Stern/ Tableau arrière
L5
L
(Overall Length/Longueur hors tout)
B2
B
(Maximum Width/Largeur maximale)
L3
L2
L4
L1

ALL MEASUREMENTS TO BE IN MILLIMETRES - TOUTES LES MESURES DOIVENT ÊTRE EN MILLIMÈTRES

LENGTH - LONGUEUR					
L mm	L1 mm	L2 mm	L3 mm	L4 mm	L5 mm

WIDTH - LARGEUR						
B mm	B1 mm	B2 mm	H (max) mm	Average Diameter of Tube Collar Diamètre moyen de la chambre pneumatique	D mm

Weight of boat in kilograms (Do not include engine and equipment or portable fuel tank) Le poids du bateau en kilogrammes (ne pas inclure le moteur et l'équipement connexe, ou le résevoir à carburant portatif)	W Kg

Stern Type - Type d'arrière		Bottom - Fond		Collar - Collier		Steering - Gouvernail		Forward of/ Avant de L/4
Transom À tableau	Tube À chambre	Soft Souple	Rigid Rigide	Inflatable Pneumatique	Rigid Rigide	Tiller Barre franche	Remote À distance	

Number of buoyancy chambers Nombre de chambres de flottaison	

Illustrations/Photos of the boat are required to be submitted showing:
i) hull shape and
ii) the occupant positions for all those persons to be carried.

Soumettre des illustrations ou des photos du bateau montrant :
i) la forme de la coque,
ii) la disposition des espaces pour les occupants.

Signature of Applicant - Signature du demandeur	Date

Canada